Vol. XIX. No. 10

California State Journal of Medicine

$4.00 a Year

ISSUED MONTHLY, OWNED AND PUBLISHED BY THE
MEDICAL SOCIETY OF THE STATE OF CALIFORNIA
ENTERED AT SAN FRANCISCO, CAL., AS SECOND-CLASS MATTER

OCTOBER, 1921

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VOL. XIX OCTOBER, 1921 No. 10

THE 1922 MEETING OF THE STATE SOCIETY

The fifty-first annual session of the Medical Society of the State of California will be held in Yosemite National Park, Monday, Tuesday, Wednesday and Thursday, May 15, 16, 17 and 18, 1922.

The American Medical Association session for 1922 will be held in St. Louis, Monday to Thursday, May 22 to 25.

It will be feasible to leave Yosemite after the close of the State meeting and be in St. Louis in time to attend the National meeting.

Arrangements are being made so that delegates, members and visitors from the western states may purchase reservations to the American Medical Association meeting with four days' stop-over privileges at Yosemite.

A proposition is being developed whereby members and visitors from eastern states may secure reservations that will allow them to come to our meeting and then go on to St. Louis.

A number of new sections have been created by action of the House of Delegates and the Council. A complete list of the sections with the name and address of the chairman and secretary of each section is published on page 379 of this number of the JOURNAL.

Each chairman and secretary already has the time and space arrangements allotted by the program committee to their section.

Members desiring to present papers should write to the chairman or secretary of the appropriate section promptly, giving the subject of the paper.

In case of doubt as to the appropriate section or where the contributor prefers to do so for any other reason, they may write directly to the Secretary of the Society as Chairman of the Program Committee, who will refer the request to the appropriate section for action.

There will be three general sessions, similar to the one that was held this year at Coronado. The program for these meetings will be handled by the general program committee.

The section on Medical Economics, Education and Hospitals has been assigned to the League for the Conservation of Public Health. This will constitute, in effect, a fourth general session, and will replace the former "League Luncheon."

The program is arranged for three meetings a day, 10 a. m. to 12:30 p. m., 2 to 4:30 p. m. and 8 to 10 p. m. These hours have been selected by the program committee so as to allow the greatest possible opportunity for recreation and social pleasures.

The morning hours of 10 a. m. to 12:30 p. m. are all taken up with the general sessions and the one morning devoted to the section on Medical Economics. A hall to seat one thousand people is being provided for these meetings.

The section meetings will all be held during the afternoons and evenings. Six meeting halls, each seating from two hundred to four hundred persons, are being arranged for section work. Hours for the various sections have been arranged so as to cause the least possible amount of inconvenience to those interested in the work of more than one section.

An "official" social program is not contemplated by the program committee. It is believed that members and visitors will secure more pleasure in Yosemite by not attempting any "organized" social and recreational program.

Space is being arranged for both scientific and commercial exhibits, and the committee will be glad to hear from anyone interested in this phase of the program.

The usual two meetings of the House of Delegates and three meetings of the Council are arranged for, and there will be one meeting of the Council with the officers of constituent societies.

The presidents and secretaries of the various western state societies, as well as those of Mexico, Alaska and the Hawaiian Islands, have been invited to attend as unofficial delegates, and if a sufficient number accept there will be one meeting of this group with the officers of our own society for the discussion of problems of mutual interest.

The Council has approved the program committee's plan that all invitations to persons or organizations to the Yosemite meeting be issued in the name of the society and not by any individual or section. Members or sections desiring any invitations sent are requested to furnish the chairman of the program committee with the names and addresses as promptly as possible. The attendance of a number of physicians of national prominence already is assured.

The last meeting of the program committee and of the Council before the annual meeting will be the latter part of January. The program **MUST** be complete by that date. It will positively go to press the first week in February.

Members are urged to make their requests for assignment, giving the title and a brief synopsis of their paper as soon as possible to the appropriate section officers or to the Secretary of the Society.

The program committee invites constructive comments and suggestions regarding the program or upon any point that will help to make this year's meeting the most profitable of any in the Society's history.

Further comment regarding the program and the 1922 session will be found in each succeeding issue of the JOURNAL.

The November number will contain information regarding reservations, transportation and similar subjects. Rules regarding papers, discussions and programs will be issued in an early number.

Make your plans to go to Yosemite Monday to Thursday, May 15 to 18, and to attend the American Medical Association meeting in St. Louis, Monday to Thursday, May 22 to 25.

STOCK SELLING HOSPITALS

It seems advisable to publish a word of caution to members of the medical profession regarding purchasing stock and otherwise co-operating with visionary or unsound hospital propositions.

Information in this office and in the office of the League for the Conservation of Public Health shows clearly that, in addition to a considerable increase in the worthy activities for the expansion of hospital facilities in various communities, there is a much larger number of propositions that are poorly conceived, visionary and in some instances unsound and even dangerous.

The records of practically all of these propositions are in the League office. Physicians will do well before supporting any proposition financially or by service, to secure the facts of the situation. Before investing time or money in any new hospital project, you may save both by writing to the League for particulars. Some are devoting time or giving their moral influence to projects that can never materialize.

THE CANCER SITUATION

Sufficiently striking to merit attention is the statement in an article elsewhere in this number that California has the highest cancer death rate in the United States outside of New England. This high rate ought to be reduced and the only way in which it can be reduced is to get our cancer patients to come earlier for treatment—for after it has widely metastasized, cancer is hopeless in the face of the highest surgical skill.

We can get our cancer patients earlier only by educating them about cancer—by convincing them that early cancer is curable and by telling them how they may recognize its beginnings. This education must come from the medical profession. To this end the American Society for the Control of Cancer deserves the united support of the medical profession in its intensive campaign of publicity during Cancer Week, October 30 to November 5.

FIXING THE SURGEON'S FEE

The action of the trustees of one of our large eastern hospitals in fixing a maximum fee for surgical operations has aroused much discussion in both the medical and lay press and wherever men gather. In California the comment is practically all in the nature of criticism of various degrees and types.

That such a ruling could be necessary or advisable in any hospital is susceptible of interpretation of past practices that the staff members of most good hospitals resent. It is difficult to believe that the surgeons of our profession, or any considerable group of them, have so far forgotten their teachings and commercialized their activities as to warrant action of the character under discussion. If such is the case, the choice of the hospital in which to make an experiment in discipline is unfortunate. This institution is heavily endowed by a great foundation and its staff members, who formerly rendered their services for personal fees, are now, in part at least, employed upon full time salary, render services for fees that are collected by the institution and used for institutional purposes.

Fair-minded persons will not want to question the motives of the distinguished board of trustees of this splendid institution, but the vast majority of physicians, as well as the thinking element of the community, are regretting a step that unquestionably is not in the best interests of the medical profession or of the public.

In a sense the persons directly affected by this ruling are practicing corporation or socialized medicine. The voice of the profession is against this principle. Surely it will not decrease the aggregate cost of medicine to the public. It will decrease a comparatively small number of large fees to people well able to pay them. It will result in a general upward tendency of fees by surgeons of all grades of ability, this under the perfectly natural philosophy that, now that a fee has been fixed for the best, no one can charge less, for fear he may be classed as second rate. So on through

a long list of normal consequences which indicate, individually and collectively, that any attempt to establish a maximum fee is not to the advantage of the public or of the profession.

ACUTE MECHANICAL OBSTRUCTION OF THE SMALL INTESTINE

By SAMUEL ROBINSON, M. D., Santa Barbara
From the Clinic of the Santa Barbara Cottage Hospital, Santa Barbara, California.

One-half of the persons operated upon for intestinal obstruction die within a week. This 50 per cent mortality is probably no exaggeration, although we welcome the recent statistics from certain clinics showing a slight reduction.

All papers upon this subject both begin and end with a plea for early operation. The death rate following operations between the forty-eighth and seventy-second hours is greater than within the first twenty-four; after the third day it is generally conceded that the chances of recovery are small. This has always been true, and yet we blunder on. We blame our medical friends for delayed diagnosis, yet we cannot deny that we have operated upon at least half of our patients later than we should have. We formerly blamed our operative mortality in appendicitis to the stupidity of the physician; nevertheless, our mortality in bad, late cases of appendicitis is almost negligible today. Improved surgical technique is generally 50 per cent responsible for the lower mortality in surgical diseases. So also must it be in intestinal obstruction. We should cure all of the early cases and many of the late ones; and late some of them will always be, because of the inevitable obscurity in diagnosis.

Fecal vomiting should not be taught as the cardinal symptom of intestinal obstruction. Fecal vomiting and calling the undertaker are closely related terminating features. Medical students are taught much about pulse, temperature, leukocytosis, and facies, distension and visible peristalsis as symptoms of obstruction. Less attention should be given such symptoms and the diagnosis based upon pain, vomiting and constipation; *the greatest of these is constipation.* Too often we scrutinously observe a patient day after day without clearly realizing that his bowels do not move and cannot be made to move. Even under such conditions we are not infrequently unable to form a mental picture of a mechanical obstruction of the bowel. We try to picture the condition before us as a temporary paralytic ileus, when the obstruction may be all the while mechanical. The dread of a developing peritonitis following operation detracts our attention from the possibility of a mechanical block caused by postoperative adhesions or from local obstructive ileus associated with local peritonitis. Then we are prone to watch the stomach contents and the abdomen itself without working repeatedly with enemas to determine definitely whether or not an intestinal obstruction exists. Constipation, stubborn, persisting and repeatedly unyielding is the symptom which should be recognized as almost our sole guide in the diagnosis of intestinal obstruction. Having accepted the diagnosis, with the help of other symptoms, we should try to determine whether the obstruction is due to adynamic, paralytic ileus, or to an actual mechanical obstruction. There are but two types of intestinal obstruction which are not likely to be corrected by opening the abdomen; these are all types of paralytic ileus without peritonitis, and postoperative paralytic ileus with general peritonitis. All types of ileus are to a greater or less extent mechanical. All types of mechanical ileus should be promptly operated upon after repeated failure to obtain an actual bowel movement or when upper bowel flatus occurs, unless there is conclusive evidence of one of the types of paralytic ileus to which I have referred.

Probably one of the chief causes of our delayed operation for intestinal obstruction is our dread of unnecessarily opening the abdomen. Would it not be better to make an occasional mistake of this character than to lose so many patients because of delayed operation?

However, even with all delays in diagnosis as contributing factors to the high mortality, yet our surgical technique is undoubtedly faulty and to a great extent responsible for the deaths from this disease.

I propose to limit myself to the subject of acute mechanical obstruction of the small intestine.

Four patients of my own in the past eight months are fresh in my memory. A careful review of the papers of the past three years has further impressed me. I venture the statement that the causes of our failures are (1) too many resections and anastomoses and (2) too little external bowel drainage.

The admirable experimental work from Chicago, Baltimore and New York laboratories is reviewed in all publications on this subject. We must accept from these certain facts. A toxic substance is formed in the distended bowel which is absorbed in proportion to the degree of destruction of the mucosa. The mucosa is made necrotic by lack of blood supply, produced probably by distention of the gut or by strangulation. This toxic substance, when injected into normal animals, produces the symptoms of intestinal obstruction and death.[1] (The toxic element has never been isolated from the blood.)

When we operate on a late case of obstruction, the lethal dose of this toxin may already have been absorbed through a damaged mucosa. If in a given case the distended gut has not yet produced sufficient change in the mucosa to produce a sublethal dose of such toxin, what should be the surgical procedure? The surgeon opens the abdomen. A coil of discolored bowel is seen among normal coils. He finds an adhesive band or a diverticulum constricting the gut; divides this and inspects the damaged coil. The color gradually changes from plum color to cherry red. What then? The patient's condition is none too good. He shows the effects of the trauma of exploration. Toxic absorption had begun before the operation. The surgeon concludes that the gut will live and not perforate if he restores it to the abdomen. Will the absorption from this discolored segment of gut cease at that moment when the constriction was released? Will the already partially damaged

mucosa no longer absorb the toxic material lying within and upon it? Will the toxic content of the damaged coil in the absence of peristaltic waves following the anæsthesia, pass promptly down into normal bowel, where we are nowadays willing to concede that normal mucosa will not absorb it? Or will the absorption in the damaged gut probably continue at least sufficiently to increase its toxic effect upon an individual whose resistance has now been lowered by operation and anæsthesia?

We have all replaced discolored bowel in such fashion and recovery has ensued. Nevertheless, this is one type of case where we gamble with a life merely for the sake of avoiding the nuisances and inconveniences of fistulæ, and secondary operation. Although replacing the gut in such instances may be successful, the safest risk would be to deliver the discolored gut outside the abdomen, to insert a catheter immediately and to freely open the gut in twelve to twenty-four hours. There would be no question, then, as to further absorption of toxic material through a damaged mucosa. A vent would be established for the accumulated gas and fecal material proximal to the original point of obstruction. The relief of distention by the gradual emptying of the distended coils favors the return of peristalsis.

Take another hypothetical example: Suppose the strangulated gut described, does not regain its luster and change of color. It cannot be replaced. Again we assume that the patient's resistance to the beginning toxicity has been reduced by the operative exploration. Resection of the discolored bowel is performed with end-to-end suture. The abdomen is hastily closed—an excellent operation has been executed. An even greater chance with the patient's life has been taken. It may succeed. If so—no fistulæ—no nuisances—all is well. But even the best surgeon, rapid, nontraumatic and deft in intestinal anastamosis, cannot deny that the safer procedure would be to deliver the coil, to empty it with a catheter, to drain it and the distended coil above to incite the restoration of peristalsis and thus decrease the risk.

I have referred to the delivery of a strangulated coil to the abdominal wall simply to contrast a safer method with doubtful replacements and resections and anastamoses. I do not mean to recommend the technique as such in all cases. It is the extreme precautionary measure—a poor kind of operation for all other reasons than its element of safety. The interval between the primary operation and the subsequent secondary operation for restoring the continuity of the bowel —an interval perhaps of several months—is a wretched one for the patient, nurses and surgeon.

Nevertheless, the principle of immediate and thorough drainage of the damaged, distended, absorbing bowel, within the extra peritoneal safety zone is the one for which I am contending, and any modification of the operative technique which will accomplish this object without the necessity of actually delivering a coil to the abdominal wall, we will all, of course, immediately accept. Such modifications are these for example: The gut is resected, the ends anastomosed; a catheter is introduced proximal to the anastomosis for the drainage of the distended proximal coils. This is the ideal operation for the right man upon the right patient. The surgeon must consider two factors—his own experience and the patient's resistance. Unless he do a resection quickly, neatly and tightly, the safer method should be used. Can a given patient in a given state of toxicity resist the trauma of a given surgeon's technique? In determining the resistance of a patient with mechanical ileus and endeavoring to measure his toxicity, we may well resort to certain guides aplicable in obstruction which we cannot always employ in other abdominal conditions.

Whipple [2] proves experimentally that the excretory function of the kidney is greatly impaired by the toxin of intestinal obstruction; that a condition similar to chronic nephritis exists, which rapidly disappears after relief of the obstruction. Whipple aptly suggests "that the nonprotein nitrogen or ureanitrogen content of the blood, as well as the kidney function, may indicate a serious intoxication and the necessity of urgent measures."

If this be true, may we not also employ the urea, phenosulphophthalein and NaC^1 tests, not only to complete the diagnosis, but to aid us in determining the degree of intoxication from which the patient is suffering, and choose the type of operation accordingly?

Van Buren [3] has recently urged the emptying and irrigation of the bowel above the point of obstruction, regardless of the method employed to relieve the obstruction itself. He believes this can be done before closure of the wound without contamination.

Codman [4] goes so far as to state that a Monks or Monyher tube should be inserted in the small bowel above the point of obstruction, and that it should be threaded along the whole length of the gut in order to relieve its distention. He believes that the reward is greater than the shock produced by this much handling of the bowel.

There are types of mechanical obstruction *without bowel strangulation* in which toxins must result from the distention above the point of obstruction. In such cases the cause of the obstruction is a local paralytic ileus from a local peritonitis, as in Handley's so-called ileus duplex.[5] In such cases the obstructive point, being not removable, must be sidetracked. Here again the choice of method is to my mind the secret of the result. Again it is a balance between the degree of resistance of the patient and the experience of the operator. An ileocolostomy for low ileal obstruction plus a cæcostomy, when the colon is also obstructed, is the classical technique. But there are occasions when a preliminary ileostomy is the emergency method of choice instead of an ileocolostomy. In other words, bowel drainage rather than intestinal anastomosis.

Another group of cases with which we are familiar recover according to the judgment employed in their handling. I refer to the mechanical ileus occurring from five to ten days after the removal of a septic appendix. A paralytic ileus may have immediately followed the operation with apparent recovery. Then neither

gas nor fecal matter can be obtained by enemata. The peristalsis is bucking against resistance and may be visible, as it rarely is, in the routine case of acute obstruction. There is vomiting. It is too early for the formation of an adhesive band. The abdomen is opened and coils of distended small bowel present. Certain coils are plastered together with exudate. The site of obstruction is not visible. One surgeon will explore the right, lower quadrant, handling and separating adherent coils, to find collapsed bowel near the cecum, and perform an ileocolostomy. He adds shock and he may produce new fields for plastic adhesions—obstruction may occur at a new point higher than his anastomosis. Another surgeon will incise in the median line under local anæsthesia—insert a tube in the first low coil presenting, and then stop. Ileostomy in such cases of local adhesive ileus, where peristalsis is yet active, will generally relieve the distention. The kinked and adherent coils are likely to become patent when the distention is relieved, and results by rectum are forthcoming within twelve hours. The chances of a strangulated section of gut being present and overlooked in these early postoperative cases is very slight.

Here again the mortality is less if we sacrifice our curiosity to localize the obstruction and perform anastomosis, and substitute a simple ileostomy of elective type. Such fistulæ generally close spontaneously.

I will cite the four instances of acute mechanical ileus of the small bowel which I have handled in the past eight months:

The first was an obstruction from volvulus of the ileum. The operation was early—twenty-four hours after onset of symptoms. Twelve inches of gut were resected, followed by end-to-end anastomosis. The convalescence to the thirteenth day was satisfactory. Recurrence of symptoms of obstruction then occurred. A second operation was done fourteen hours later. There was a local, plastic exudate at the site of the original anastomosis. Three coils were adherent and angulated at this point. Forty minutes were wasted in the separating of these coils and in suturing a bowel tear incident to it. The bowel at the site of the old anastomosis was then delivered into the wound. A catheter was inserted. Immediate paralytic ileus ensued with no response to peristaltic stimulation. Death occurred on the third day. This fatality was probably inexcusable. The local infection was not from a leaking anastomosis, and therefore probably from contamination at the time of the anastomosis; hence the later development, local infection and local ileus. Had I, at the first operation, resected the bowel and brought the ends out, or delivered the bowel and resected it with a cautery, a secondary operation would have been necessary, but the patient might have lived.

And again, at the second operation, had I not attempted to relieve the adherent coils of bowel, but had incidentally done an ileostomy to the distended coil, then I might have saved the patient.

The second case: Another surgeon had removed the right ovary and appendix. A paralytic ileus immediately followed three days after operation, in the presence of marked distention. The wound broke open and the bowel presented. I repaired the wound under gas and oxygen anæsthesia. The distention continued with vomiting, constipation and pain, but without visible peristalsis. I fell into the trap of regarding the condition as a continuing paralytic ileus and delayed four days. At operation, an adhesion hand in the region of the primary operation was divided and the bowel restored to the abdomen.

I credit the recovery of this patient to the lack of strangulation and intoxication. The absorption was sufficient from the distended coils above the point of obstruction to cause definite symptoms of toxemia, and it was not sufficient to be fatal. The delay in operating for relief of obstruction was the old, common, but inexcusable one of interpreting the condition as one of paralytic ileus.

The third instance was one of strangulation of seven inches of the upper ileum from a band—perhaps the remains of a Meckel's diverticulum. Perforation of the necrotic bowel had occurred 1 cm. from the constricting band, followed by general peritonitis, fibrin and purulent fluid apparently free in the abdominal cavity. The physician called me on the second day, and then it took me seven days to decide that operation was necessary, in which time I visited and examined the patient twice daily.

Is not this inconceivable? The abdomen was not distended. Peristalsis was not visible. Enemata brought some flatus and some fecal material, but obviously only from the bowel below the obstruction. There were spasmodic pains from the beginning, which did not increase in severity and occurred sometimes at intervals of two to three hours. The temperature, pulse and leukocytosis were negligible. It was only because of a slight change in the quality of the pulse that I decided to operate. When the physician saw the contents of this woman's abdomen, I think he concluded that any subsequent censures which might ever be showered upon him by a surgeon would be met with rebuke.

After dividing the constricting band, the discolored gut was brought out of the wound and sutured, leaving room for a single pelvic drain. A catheter was immediately inserted and twelve hours later the necrotic bowel was removed with a cautery. Of course there was infection of the wound, but recovery occurred without a hectic convalescence.

The usual dermatitis occurred and it was three months before the skin permitted a secondary operation, at which time the original wound with the two presenting bowel ends was excised *in toto*. The freshened intraabdominal stumps were then closed and a side-to-side anastomosis performed at the ends. The patient is now entirely well.

This was one of the instances where I employed the safer technique. It was the seventh day and yet our mortality statistics show that after the third day there is little hope; little hope, I repeat, for resection or anastomosis, but some hope yet if the simpler technique is employed.

The fourth patient was a woman of forty-three who had been operated by another surgeon for cancer of the cervix by the Percy cautery method. A vesicovaginal fistula had resulted.

Three months after the operation, obstruction of both ureters occurred either from recurring carcinoma in the bladder wall, or from cicatrization following the cautery burn. I performed a left nephrotomy as an emergency to relieve the urinary obstruction. Five months later I removed the opposite pyonephrotic dead kidney. Prior to this operation there had been occasional lower, right abdominal pains with visible peristalsis.

Two weeks after the nephrectomy, the symptoms of obstruction returned in an acute form. Seventy-two hours were allowed after the diagnosis was made to see if the bowel might again become patent, since a patient with a vesicovaginal fistula, a nephrostomy fistula, recurring carcinoma, and convalescent from a recent nephrectomy, was one possibly entitled to delay. A fourth intrusion upon the efforts of Nature to end this woman's life was reluctantly decided upon.

A phenosulphophthalein test was made from the left nephrostomy tube, which showed a normal function. Through a median incision, the right iliac region was hastily palpated, revealing collapse of the last portion of the ileum. The obstruction was apparently not from recurring growth. A low, distended coil of ileum was brought into the wound and sutured there. A rubber tube was inserted and twelve hours later the bowel was opened freely.

This patient recovered from the operation, and is alive today, four months after the last operation. I propose soon to close the ileostomy and probably do an ileocolostomy.

Of the four instances, three have survived. The only case which was operated upon within the first three days, died. Late cases then may yet be saved. As to the symptomatology—pain, vomiting, and constipation were present in all four cases. Visible peristalsis was present in but one.

I believe that ileostomy in two cases explains their recovery, and that any further operative procedure would have killed both.

Had I performed simple ileostomy at the time of the late, secondary obstruction in the only fatal case, I believe that my total mortality would have been zero.

In conclusion, may I reiterate my contention that the persistently high mortality in the surgery of acute mechanical obstruction of the small intestine is due in part to delayed diagnosis, but more particularly to errors in judgment as to the proper surgical technique to employ in a given case. This error consists primarily in an overenthusiasm for radical measures, such as resections and anastomoses, and an unjustifiable reluctance to employ ileostomy alone.

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2. Renal Function Influenced by Intestinal Obstruction, by Irvine McQuarrie and A. G. Whipple, M. D. Journal of Experimental Medicine, vol. xxix, p. 397, 1919.
3. The Relation Between Intestinal Damage and Delayed Operation in Acute Mechanical Ileus, by Frederick T. Van Buren Jr., M. D., of New York. Annals of Surgery, vol. lxxxii, p. 610, November, 1920.
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UNCOMPLICATED FRACTURES OF THE PELVIC RING*

By HAROLD BRUNN, M. D., and
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This paper is based on material seen in private practice, in the San Francisco Hospital, in the University of California Surgical Service, and on cases referred by the Industrial Accident Commission and the State Compensation Insurance Fund. We have attempted to make ourselves conversant with the pelvic fractures that have been reported to the Industrial Accident Commission and to larger insurance companies. Unfortunately, their case records are incomplete and difficult to obtain. Therefore, no statistical record of the incidence of pelvic fracture, or even of the relation of fracture to disability can be drawn from their files.

This paper does not attempt to consider the different varieties of pelvic fracture, but confines itself solely to fractures of the pelvic girdle. We have attempted to discover causes of disability following injuries of the bony framework of the pelvis. We are not considering complications due to injury to the bladder, urethra and pelvic vicera.

Burnham points out that in statistics taken from the Presbyterian Hospital, New York City, fractures of the pelvis occurred about one-fifth as often as fractures of the femur, and about twice as often as fractures of the vertebræ.

Plagemann's statistics from Rostock, based on X-ray diagnoses of 1393 fractures, show 1.22 per cent of fractures of the pelvis. This varies in different clinics down to 0.54 per cent, depending on the location of the hospital.

The diagnosis of fractures of the pelvis is not always easy to determine clinically. The usual absence of crepitus and the inaccessibility of the parts adds to this difficulty. It has been our experience on a number of occasions to find patients complaining mainly of pain around the hip, so that a lesion of this bone was suspected, rather than an injury to the pelvis, with the result that many days elapsed before a true diagnosis of the injury was made.

It is unfortunate from the point of view of diagnosis that some patients with fractures of the pelvis are able to walk for considerable distances unaided, a fact which has led the examining surgeon to overlook the seriousness of the injury.

Not infrequently a patient with a pelvic fracture, after a few days in bed, is quite free from pain, and the attending surgeon misinterprets the symptoms as a simple contusion. Our Industrial Accident cases seem to verify this statement. For some reason X-ray pictures of the pelvis are not always made, or if made, are incomplete or poorly taken. This is especially so in the country, where the services of a good X-ray plant are usually not available. The misinterpretation of a poor plate has led to many errors that might otherwise have been avoided.

We would, therefore, insist that in any severe injury around these parts, and especially in cases of fractured neck of the femur, that a plate of

* Read before the Fiftieth Annual Meeting of the Medical Society of the State of California, Coronado, May, 1921.

the pelvis be taken to exclude any possibility of an associated pelvic fracture.

Jensen calls particular attention to the fact that the pelvis can be fractured by slight trauma, in some of his cases so slight that no one has thought of the possibility of fracture. In five cases the fracture was the result of a fall in getting out of a street-car, in three the result of a fall from a bicycle, in four the result of a fall on the stairs, and in one, the result of tripping on the floor, in the case of an elderly woman. In one case, after recovery from fracture of the skull, persisting pains in the pelvis and limbs were ascribed to a traumatic neurosis or hysteria until X-ray revealed a fracture of the pelvis with viscious callus. In other cases a coincident fracture of the femur massed the fracture in the pubis. In three cases the patients were treated at various hospitals for contusions. In four cases the fracture escaped detection, and the patients crippled for a year or more. In our own experience similar cases of overlooked diagnoses have occurred.

Careful palpation of the pelvis in all possible positions, and examinations through the rectum and vagina, is an essential preliminary to diagnosis. It is surprising how little pain there may be even upon deep pressure, how disarming the patient's assertions of comfort after five or six days in bed, even in the face of severe fractures of the pelvic bones.

We have found that an important and persistent symptom of fracture of the pelvis is an inability of the patient to turn over in bed unassisted, without great pain. This symptom may be present, of course, with injuries other than those of fracture, but when it is present and persistent we should recognize that fracture of the pelvis is possible, and a careful X-ray examination should be made. Our attention was first drawn to this sign by the frequency of its occurrence in late cases of disability. These patients would frequently state that following the injury they soon became comfortable in bed, lying on their back; that after two or three weeks they were permitted to go about on crutches; that turning in bed, however, caused them great pain, and that this difficulty persisted even one or two years after the injury was sustained. It is a sign, therefore, the presence of which should not be disregarded, and demands a further search on the surgeon's part for its cause.

Temperature following fracture of the pelvis is very common, frequently rising to 102, and lasting five or six days. Its presence does not always mean that it is due to complications, but if it does not recede in a few days, an overlooked complication must be seriously sought for.

The question of treatment in fractures of the pelvis is usually dismissed with a very few words. The present accepted method is the use of the plaster of paris cast. We have come more and more to look upon this method with disfavor. 1. It is heavy and cumbersome. The patient is not comfortable, and nursing is difficult. 2. Anesthesia is often used for its application. 3. It is not mechanically efficient. The body contracts away from the cast, leaving considerable latitude of movement. There is not a constant correcting pressure tending to bring the fragments in apposition, but rather the tendency of the plaster cast is to hold the fragments in the doubtful position they were in at the time of application. 4. Plaster of paris, during the number of months necessary for treatment, produces anemia from circulatory pressure, atrophy in muscle and fascia, and changes in the joints, which delay the period of convalescence after the patients are able to get out of bed. We have found that these patients, especially those with arthritic tendencies, following the use of plaster, may take from two to three months longer before they can get around without the aid of cane or crutch. We believe this to be due to the reasons cited above. 5. It seems to us, from our personal experience, that not only the temporary disability, but also the permanent disability is greater after the use of plaster of paris, in comparison with the simpler method which we have adopted.

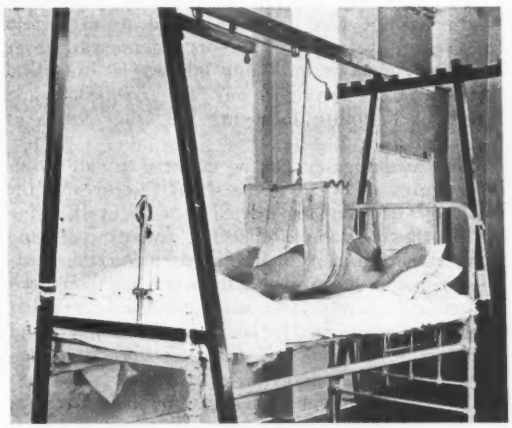

Fig. I.—Suspension apparatus for treating fractures of the pelvis.

The use of fixation with sandbags and adhesive plaster are open to similar objections of inefficiency.

After trying practically all of the accepted methods, we would like to emphasize the method which we have adopted to the exclusion of all others.

This method consists essentially of a canvas sling, about fifteen inches wide, which passes around the pelvis and suspends the patient a few inches above the bed. The sling itself is suspended from an overhead crossbar or Balkan frame. (See Fig. I.) The essential correcting and immobilizing factor is due to the compression forces of the sling acting on the pelvic girdle, a force which is approximately equal to the major portion of the body weight. This force is continually acting, and with the relaxation of the muscle there is a constant disposition for the displaced fragments to fall into their natural positions. In those cases where the entire side of the pelvis is displaced, as in associated fracture-dislocations of the

sacroiliac joint, a Buck's extension of the leg is a valuable adjunct.

The advantages of this method of treatment consist in ease and comfort to the patient, simplicity of nursing, avoidance of muscular atrophy, better circulation throughout the pelvis, and accessibility when incision or dressings are necessary, in cases of complications.

More important than these advantages, but perhaps dependent upon them, is the fact, as shown by all the cases which we have treated, that the patients on getting out of bed experience no pain or disability whatsoever, and in a remarkably short time are able to walk about unassisted, and to resume their occupations.

No originality is claimed for this method of treatment. It was used by one of us in certain cases many years ago, but its value was never impressed upon us until our interest in Industrial Accident cases brought out the frequency and length of disability following the other forms of treatment.

This method may not be essential to all forms of fractures. Perhaps some slight fractures of the pelvic girdle may be treated just as well, lying flat on the back in bed. Other fractures demand manipulation under anesthetic to bring the parts in proper apposition, especially when the symphysis has sprung apart. It is so simple, however, that it can be used equally well in the simpler and the more severe types of fracture, without added discomfort to the patient.

The length of time that a patient should remain in bed is an equally important factor in preventing disability. The surgeon too frequently shortens the period of rest in bed because he lacks knowledge, desires to minimize expense, or yields to the urgings of patients whose symptoms have disappeared. Because of the weight-bearing necessity to which the pelvis is subjected, union must be firm and complete before the patient arise from his bed. Two or three months in bed are usually required for fractures of the pelvic girdle. It is believed that it is seldom safe to allow the patient to walk before this time.

The three cases which we wish now to report are chosen from a considerable series, treated by the sling method. They represent the worst types of fractures with which we have had to deal, and the fracturing force in all of them was as severe as any of those which we have had to referee for late disability.

Case I.—W. C. On July 20, 1920, patient, while working as a moving crane tender, was crushed between a crane and an iron column. The pressure came just over his pelvis, and when he attempted to stand up he found that he was unable to do so, owing to the extreme pain. We saw the patient a few hours later in consultation with Dr. Alfred Roncovieri, at which time the patient complained of great pain, especially in the right groin, and while he could move his legs, the effort caused him much distress. His abdomen was distended and tense, but there was no definite tenderness elicited. He voided urine without difficulty, which was free from blood. The left buttocks was definitely ecchymosed. The spine presented nothing abnormal in appearance, and sensory examination of the legs was negative. Pressure on the crest of the ileum caused some pain, while pressure over the great trochanter of the right femur caused great pain in the right groin and over the bladder. Movements of the hip joints were normal, but internal rotation, flexion, and abduction beyond 45 degrees caused pain over the lower abdomen and in the region of the symphysis. Rectal examination normal except for some fullness and tenderness at the right sacroiliac joint. X-ray examination showed a double vertical fracture of both rami, with a fractural dislocation of the right sacroiliac joint, with an upward and backward displacement of the right ileum and ischium. Temperature 100. P. 100. R. 20.

Traction, by means of Buck's extension, was applied to the right lower limb, and the patient was suspended by means of a canvas sling. All his pain was immediately relieved, and the patient was kept in this sling for a period of ten weeks. At the end of this time the sling was removed, and the patient was permitted to lie freely in bed for one week. He was permitted to get up, and found that with the aid of canes he was able to walk around absolutely free of any symptoms except a general weakness. He was discharged from the hospital on September 16. Examination at this time showed the man to be absolutely free from symptoms. He had no tenderness at any place. Movements of the hips were free and painless. He could assume any desired position, and he demonstrated his well-being by skipping and jumping. X-ray examination showed that the traction combined with the compression due to the sling had resulted in a marked improvement of the position of the fragments.

The patient returned home, and at the end of five weeks returned to his former occupation. When last heard from he stated that he had no pain or discomfort whatsoever, and that he felt himself as physically fit for his work as he had been before his injury.

Case II.—Miss F., age 44. Entered Lane Hospital April 3, 1916. During a spell of temporary mental aberration the patient jumped from a third-story window, landing on a concrete pavement. As a result she sustained serious injuries, as follows: Compound fractures of the tibia and fibula of both legs. On the left side the bones were comminuted, and the soft parts pulpified. There was a comminuted fracture of the os calcis of the left foot, fractures of the second, third, and fourth lumbar vertebrae, and a severe fracture of the pelvis. X-ray plate of the latter showed a fracture through the ascending and descending ramus of the pubic bone on the left side, with wide separation at the symphysis, and a separation at the left sacroiliac joint.

The patient passed through a stormy convalescence. Amputation of the left leg below the knee was necessary. The only comfortable apparatus that we could use for the fractured pelvis was the suspension apparatus herein described.

X-ray pictures taken of the pelvis a month after the injury showed that the pubic bone at the symphysis had gone back into place, and there was evidence of union at the site of the fracture.

She left the hospital on the 29th of May, something less than two months after the injury. She was still unable, because of her injuries, to be out of bed. In June she was able to be about on crutches, that is, about three months after the injury. Later an artificial limb was obtained, which threw added strain upon the pelvic fracture, but at no time during her convalescence, or later, were there any symptoms or complaints referable to the fracture of the pelvis.

Case III.—Mrs. F. Patient seen with Dr. Naffziger at the Franklin Hospital on the evening of January 25, 1920. Her injuries occurred in an automobile accident on the day previous, which resulted in a fracture of the skull and a fracture of the pelvic girdle. The latter had caused a rupture of the bladder, and there was evidence of extravasa-

tion of blood and urine in the retroperitoneal space.

An immediate operation was performed. The tear in the bladder was closed, and the patient was placed in the suspension apparatus for her fractured pelvis. The X-ray showed a fracture through the ascending and descending ramus of the pubis, with separation of the sacroiliac joint.

The suspension apparatus made dressings of the wound very easy of accomplishment. There was no leakage of urine. Patient made a very excellent recovery. She was allowed to sit in a chair at the end of the tenth week. Three days later she was walking around the room with crutches. She was discharged April 25, just three months after the injury. Her stay in the hospital was prolonged because of her mental symptoms. She was always an excitable and nervous woman, given to a great many complaints, but in spite of this, at no time was there any disability or complaint referable to the fracture of the pelvis.

From the Industrial Accident Commission cases which we have refereed, and from the cases gathered from the files of the Industrial Accident Commission and the State Compensation Insurance Fund, through the kindness of Dr. Morton Gibbons and Dr. Lester Newman, certain conclusions may be permitted.

It is a striking fact, noted early in our reports to the commission, that the cases coming up for disability were permitted early weight-bearing, before sufficient time had been allowed for union of the fragments to occur. Some of the cases with very simple fracture, where the diagnosis was overlooked and no recumbent treatment was instituted, showed disabilities equally as great as the more severe injuries. These points are exemplified in the following cases: C. J., M., A., S.

S., foreman. Refereed February 16, 1921. Injured August 7, 1920. Fell fifteen feet, striking left side. Treatment in bed with sandbags for five and one-half weeks. Walked with crutches for one week, free from pain, then used a cane. At later date noted certain symptoms. Fracture of ascending ramus of pubis, left side. No excess callus; well united. Symptoms: Dull ache in left groin, aggravated by any exertion. After walking any distance, the left hip becomes weak. Patient an intelligent man, foreman, suffering disability probably from insfficient treatment at time of fracture.

A. Referred June 22, 1911. Injury, October 9, 1916. Hit by a handcar loaded with lumber, and thrown from a bridge three feet high, landing on right hip. Walked on crutches in fourteen days. No immobilization used. Fracture of descending ramus of ischium and pubis, close to tuberosity. No excess callus. Symptoms: Patient neurotic type. Physical examination negative. Claimed pain behind the left trochanter in the region of the ischial tuberosity, referred down the posterior aspect of the thigh. Pain increased on exertion. Disability the result of improper early treatment.

St. ———, laborer. Refereed May 16, 1919. Injured September 12, 1918. Pelvis crushed between two logs. Treated in hospital for five weeks with a pelvic bandage. X-ray showed fracture of the ascending and descending rami of the pubis, somewhat comminuted, and with considerable callus formation. Separation of both sacroiliac joints. Symptoms: Usually walks with a cane, with which he lists to the right side and forward, and supports his body with his hand. Unable to turn over in bed without pain. Any sudden movement causes pain. Pain over the left pubic ramus increased on exertion or pressure. Pain referred down left leg to knee (obturatos nemo).

R., laborer. Refereed January 13, 1919. Injured March 6, 1918. Pinned between a steam shovel and a bank. Many other concomitant injuries. Length of time of treatment of pelvis not known. Fracture of left descending ramus of the pubis, with great displacement. Bone felt on palpation in left perineum. Symptoms: Walks with a limp. Difficulty in turning in bed or getting out of bed. Pain around the pelvis on left side, radiating into left hip. All symptoms increased on exertion. Patient lists to left side when he walks.

C. J. Refereed August 4, 1917. Injured May 26, 1917, by fall. Received no treatment for a sustained fractured pelvis, owing to the fact that the true diagnosis was not made. The injury to the pelvis was a mere crack, involving the ascending and descending rami on the right side. Symptoms: Walks without limp or cane. Complains of pain in right groin or gluteal fold. When he attempts to lift, the pain is accentuated so that he cannot work. He was thought to be a malingerer.

M. Refereed February, 1918. Injured May 29, 1917. Run over by a lumber wagon, wheel passing over left thigh and pelvis. In hospital fourteen weeks. Plaster cast for eleven weeks. Symptoms: Walks with a limp. Weakness in left leg. Difficult to turn in bed. Assumes sitting position with difficulty, and is unable to get up without the use of his hands.

CONCLUSIONS

1. Fractures of the pelvis should not be overlooked because of the slight trauma sustained.
2. X-ray examination of the pelvic bones is still not made frequently enough.
3. The inability of the patient to turn in bed without pain is the most characteristic single symptom of fracture of the pelvis which should demand X-ray examination.
4. Inefficient early treatment and, particularly, insufficient time in bed for solid union, is the most common cause for later permanent disability.
5. Late disabilities following fracture of the pelvis are difficult to remedy.
6. The suspension method in the treatment of fractures of the pelvis offers advantages in simplicity, comfort, and results.

"THE INCIDENCE AND CLINICAL SIGNIFICANCE OF FLAGELLATE INFECTION IN CERTAIN CHRONIC DISEASES."*

By JOHN V. BARROW, S. B., M. D., Los Angeles.

The purpose of this paper is chiefly to place before the profession the clinical findings in a considerable group of patients similarly infected with the flagellated protozoa. The cases mixed with amoebic infection are purposely omitted from this series.

A long experience and careful study of these organisms enable me to be comparatively certain of their identification. No case in which the diagnosis of flagellates is in doubt has been admitted to this series. This work has been done on patients from routine private practice. It not only embraces diagnosis with attendant analysis, but also includes treatment with all necessary and subsequent tests. Stool analyses have been done after the technic of Prof. Chas. A.

* Read before the Fiftieth Annual Meeting of the Medical Society of the State of California, Coronado, May, 1921.

Kofoid,[12] whose skillful and cheerful help is most gratefully acknowledged.

The clinical work on these cases has been largely a pioneer's ordeal. The flagellate Lamblia or Giardia was first discovered by Lambl in 1859. This antedates the same author's finding of amoeba by one year. Davaine discovered Trichomonas intestinalis in 1864. These discoveries do not seem to have stimulated much investigation of general importance. This medical legarthy is well illustrated by a quotation from Geo. Dock [1] in his article "Trichomonas as a Parasite of Man." It was written twenty-five years ago and is probably still ten years ahead of the medical times. Then he said, "On the whole, the parasites have been deemed of so little importance that scant notice is given them. The descriptions in most text-books on Gynecology, Microscopy, and Pathology, are inadequate or erroneous and the same is true even of some recent works on animal parasites." The latest edition of Osler and McCrae [2] quotes the above article. The lavish extravagance of three creditable lines admits the pathogenicity of Lamblia. The Trichomonas vaginalis is mentioned. Chilomastix is not mentioned. Positively, no treatment is even hinted at. Dysentery is the only criterion of the infection. Another text-book on human parasitology [3] does not have the term "Giardia." It, however, removes the Lamblia from its duodenal home to the more spacious large intestine. In its compilation on Trichomonas intestinalis, its latest quoted article is one in German, bearing the date of 1904. This author frankly informs us that the Lamblia intestinalis is occasionally seen in the *normal* intestine of man. However, he waxes illuminating in the succeeding sentence by stating that it is more apt to be found in cases of diarrhœa and amœbiasis. Thus he slowly approaches an admission of their pathogenicity, but he does not allow himself to discuss treatment. Other authors in our medical journals have reported incidences of infection and have contributed both clinically and experimentally to their belief in the pathogenic power of these organisms. Fantham and Porter[4] report the finding of Lamblia alone infecting 187 out of 1305 men from Gallipoli. Dysentery was a common symptom. These patients were described as weak to the slightest exertion, and showed subnormal temperatures. There was marked erosion and distortion of cells in the cases examined. The stools were noticeably abnormal and at times bloody.

In support of their clinical work, the above authors were able, experimentally, to infect eight out of ten kittens. Those infected died from the sixth to the fifty-third day after feeding on the cysts. Two of their conclusions interest us here. The first is—that Giardia intestinalis is pathogenic to man and can produce diarrhœa. The second is —that the virulence is a variable factor.

Recently, Wenyon[5] has given the histological observations on five cases of Trichomonas and three cases of Chilomastix. His frank statement is that the organisms occur most frequently in diarrhœic stools. The Trichomonas was found in the first three feet of the small intestine and throughout the large bowel. The Chilomastix involved the large bowel as well as the small. In one case the organisms were actually invading the interglandular connective tissue. He leaves the conviction that this invasion was antemortem and through the broken down goblet cells. There was a remarkably small amount of tissue reaction to these organisms.

His work proves that Trichomonas can invade the tissues of the intestine, but whether this is evidence of its pathogenicity requires more work. Hadley[6] has, unquestionably, proven that the Trichomonas does invade the intestinal wall of turkeys.

The above references will serve to show the trend of thought in the literature of recent years toward the pathogenicity of these organisms.

We shall now consider, briefly, their incidence and something of their geographical distribution. In the examination of 2300 overseas troops, Kofoid[7] found Chilomastix in 4.2 per cent and Giardia in 5.7 per cent. The percentage did not vary substantially in the examination of 576 home service men of U. S. Army Hospital No. 3, N. Y. City. Boulenger[8] found the percentage of Giardia remarkably constant in both British and Indian troops. Trichomonas was more common among the Indians and Chilomastix predominated among the British. In North Queensland, Maplestone[9] examined 500 healthy people of all ages at random and found Lamblia cysts in 11.8 per cent and Chilomastix in 22 per cent. His highest incidence of infection as to age was in children from one to fifteen years, which averaged better than 20 per cent for Lamblia cysts. It must be remembered that the above cases were not studied and consequently are of little value clinically.

Before taking up the direct consideration of my clinical report, I desire to emphasize the fact that dysentery is not the all important symptom in any chronic and heavy protozoan infection. It is often an attendant symptom, but by no means the most direct expression of the malady. Toxæmia or systemic poisoning manifested by a definite disturbance of metabolism, joints, blood forming organs, endocrine function, nervous system, psychic imbalance as well as dysentery—all make up the sum-total of chronic prozoan infection. I do not use the term, toxæmia, as is so often loosely applied to "Auto-intoxication." I mean a poisoning even more definite in its clinical aspects than any of our well recognized mineral poisons such as lead or arsenic. There is substantial clinical evidence that a toxin is entering the system from the digestive tube in these infections. The manner of its elaboration is the next and greatest problem of chemistry and biology in their relation to medicine of the near future. The whole story of bacterial action, ferments, food chemistry, metabolism, liver, pancreas, and endocrine function, is intimately involved in the complete solution of this problem. This toxin is undoubtedly a complement of other poisons from various foci of infection. It is a common observation to see very septic tonsils, or apical abscesses in

a patient with correct entero-hepatic function and no arthritis result. The reverse is often seen where the disfunction is in the digestive tube and no other attendant focal infection with no resulting arthritis. However, when the intestinal toxin is combined with the complement of focal infection, an arthritis or other metabolic imbalance of similar moment results. As the principal factors concerned are necessarily variables, so also must the end products of disease be variables. The above conception certainly gives us a clearer vision of the relation existing between seemingly very different diseases, as the arthritides, the severe anæmias, the dermatoses, the neuropathies and the endocrine disfunctions.

The following report embraces 150 cases which is an incidence of 20 per cent of all patients coming under my clinical observations, during the time of their selection and study. The individual symptomatology is varied in its external expression, but the whole series is certainly one of kindred groups. In the main, the presenting symptoms of all were similar and were expressed about as follows: Extreme weakness, lassitude, loss of appetite and weight, dizziness, bad taste, gastro-intestinal dispepsia, anæmia, rheumatism, abdominal pain and tenderness, melancholia, cerebro-cervical pain and the various forms of neuritis. So characteristic was the above symptom-complex that we were enabled during the latter part of this series to predict in which cases these protozoa would be found. I do not think I can regard any of these cases as "carriers." Each case had a routine of from three to thirty or more analyses. One or two analyses were made from the patients' normal movement. Then, wherever possible, repetition was done following a saline. The cysts were usually readily found in the first or second analysis. Active organisms usually came with the saline passage. The giardia seldom appeared motile. The chilomastix and trichomonas were most actively motile. In the most toxic cases, billions of organisms came away dead and disintegrating.

The statistics and tabulations below are compiled on the basis of these infected cases and embrace more than three thousand analyses. All stools were examined for chemical blood. Forty-four per cent showed a trace to one-plus. Twenty-five per cent showed two to three-plus. Sixty-nine per cent had blood in some form chemically. Bile was scant to absent in most cases. Those having periodic dysenteric attacks showed a clearing up of organisms when the bile flow was well established. The stool reaction was usually faintly alkaline to neutral. Fatty acid crystals were the rule in the heavily infected cases, and invariably accompanied the metabolic cases..

The blood peculiarities were especially marked in two or three respects. Anæmia below 70 per cent was present in 42 per cent of the cases. There was an eosinophilia over 2 per cent in 15 per cent. Nearly an universal mononuclear excess of from 30 per cent to 54 per cent existed. The large monos predominated.

The urinalysis was not of moment except for the frequent finding of indican. The CO_2 tension of alveolar air was usually low. Low blood pressure is the rule, although in a few cases, particularly of Giardia infection, it ran abnormally high. Low stomach acidity was common. However, a small percentage complained of hyper-acidity. The Wassermann reaction was positive in only two cases. Prominent clinical symptoms expressed in percentage are as follows:

(1) Severe anaemia—pernicious in type, 26%.
(2) Disturbance of metabolism, 54%.
(3) Arthritis—simple and multiple, 28.6%.
(4) Arthritis—deformans in type, 9.4%.
(5) Arthritis—of all types, 38%.
(All arthritis—deformans cases were 95% infected.)
(6) Epilepsy—convulsions, etc., 3.3%.
(7) Attacks of dizziness, 24.3%.
(8) Asthma and hay fever, 4%.
(9) Urticaria, psoriasis and pellagra, 17%.
(10) Neuritis and neurapathies, 55.3%.
(11) Constipation, 29.3%.
(12) Diarrhoea, 18%.
(13) Alternating diarrhoea and constipation, 21.3%.
(14) No bowel disturbance, 31.3%.
(15) Bowel tenderness—chiefly over the sigmoid, caecum and duodenum, 75.3%. (In many cases this tenderness amounted to almost a peritonitis.)

From the above it can readily be seen that if we measure toxæmia here by dysentery, only 39.3 per cent of these patients are sick. Measured by bowel tenderness, 75.3 per cent are sick; by neurology, 55.3 per cent; by arthritis, 38 per cent; by dermatoses, 17 per cent; by metabolic disturbance, 54 per cent; by constipation, 29.3 per cent; but by the combination of symptoms, 100 per cent.

The geographical disturbance of these cases covers twenty States and seven foreign countries. Because of interstate jealousies, I shall not mention the one in the lead. The age incidence is interesting and does not agree with that given in most text-books. However, this fact should not be particularly surprising. By decades it follows:

	Cases	Percent.
1 year to 9 years inclusive	2	7.3
10 years to 19 years inclusive	7	7.3
20 years to 29 years inclusive	27	18
30 years to 39 years inclusive	39	26
40 years to 49 years inclusive	38	25.3
50 years to 59 years inclusive	27	18
60 years and over	8	5.3

It will be seen that from the twentieth to the sixtieth years are found 87 per cent of all cases. Fifty-one per cent exist between the ages of thirty and fifty years.

The low incidence in children is influenced by their being referred generally to the pediatrician. Other conclusions must be drawn concerning the aged.

This research would not be complete without the report of surgery done on the cases during their quest for health. Most of them have been bona fide attempts to cure or ameliorate this chronic symptom—complex. In all, 41.3% had been operated on previous to seeking medical aid. Rather loosely grouped, they include gynecological, 11.3%; gastro-intestinal, 28%; throat, nose and ear, 2%. The particular operations performed were as follows: Chronic mastoiditis, 1; nasal septum, 1; tonsilectomy, 1; ventral sus-

pension, 3; pelvic abscess, 1; salpingectomy, 3; ovariectomy, 4; hysterectomy, 1; herniotomy, 2; perforation and peritonitis, 7; liver abscess, 1; hemorrhoids, 2; gastro-enterostomy, 1; cholecystectomy, 6; appendectomy, 21. By far the greater per cent of this surgery has been well directed and proceeded from sound medical judgment. I am glad to add here that where mechanical stasis exists, a cure probably can never be expected until the surgical correction is made. But once an infection is well established, surgery alone will bring only partial relief, and if not done in the light of good mechanics, it would have been better not attempted. Normal emptying both in time and quantity is exceedingly necessary to a normal bowel. Partial stasis produces the only successful incubator for protozoan parasites of any type. Upon the above principle rests the ability of otherwise harmless parasites to develop substances of great pathogenic power, of long duration, and certain chronic telling effect upon the host.

The following organisms were found:

Chilomastix mesnili was present in.....	59 cases
Giardia intestinalis was present in.....	41 cases
Trichomonas intestinalis was present in..	16 cases
Craigia was present in.....	3 cases
Flagellates unclassified were present in....	13 cases
Mixed Chilomastix and Trichomonas.....	7 cases
Mixed Chilomastix and Giardia.....	9 cases
Mixed Trichomonas and Giardia.....	2 cases
Total	150 cases

The Blastocystis hominis was present in thirty-four cases. It was found in every case of severe dysentery. This organism is one of the diagnostic pitfalls of the beginner in medical protozoology. The higher the magnifying power of the mictoscope, the deeper the pitfall.

There is very suggestive evidence that one infected person may contaminate the whole household. My series has two families undoubtedly all infected by means of a common douche tip. It is my personal impression that ordinary bathroom and toilet technic is responsible for a goodly number of infections.

I now pass to the clinical report of one case from each group whose main presenting symptoms are respectively as follows:

(1) Dermatologic,
(2) Neurologic,
(3) Metabolic,
(4) Arthritic,
(5) Dysenteric.

DERMATOLOGIC GROUP

Mrs. A., aged 40, presented herself with the main complaint of promiscuous swellings over various parts of the body. These were of the character of an angic-neurotic oedema, with a tendency to fine papular rash. Although these areas would appear on any part of the body, their most usual location was on the hands and feet. This trouble dates back almost twenty-two years, while the patient was living in Philadelphia. Additional complaint is a highly acid stomach, with considerable bowel flatulence. There is some slight pain after eating at times, but not referable to any particular food, or to any regularity of appearance. All food seems about the same to her. There is some constipation, and on account of this the patient has been in the habit of using various large enemas. However, at times there are attacks in which the bowels move five or six times daily. During these attacks, the patient usually feels improved. She is highly nervous and for her various complaints has had many different types and cults of treatment. She has considerable muscular soreness and attacks which she calls rheumatism. There is considerable neck soreness and she tires very easily on the slightest exertion. The bowels are tender, so that she notices ordinary jars in walking. She has always had considerable menstrual disturbance in the form of dysmenorrhea. She had diphtheria and measles as a child. She has one child living and well, and comes from a healthy stock. Otherwise her history is not pertinent to her complaint. Her physical examination shows a blood pressure of 95-60; temperature, 98; pulse, 70; respiration, 18; her eye and knee reflexes are normal; the nares show the usual effects of a mild atrophic rhinitis; all but two of the teeth are gone; the tonsils and adenoids are in fair condition; the sense of smell is greatly diminished, but taste is normal; ears are negative. There is no cervical adenopathy. The posterior neck muscles are rigid. The chest shows some old consolidation in left apex. The heart is normal in tones. The abdominal muscles are spastic and considerable tenderness is present over the caecum and in the duodenal region. The sacrum also is very tender. There is no pelvic abnormality. The toes are reddened, swollen, and show the results of blisters as in a chronic dyshydrosis. The arches show evidence of some breakdown. The blood count is Hb 70%; Rbc, 3,600,000; poly, 59; small monos, 21; large monos, 16; Eos, 2; Bas, 2; the Wassermann reaction is negative; the CO_2 of the alveolar air is 30; urinalysis is normal except for 2 plus indican. The first stool analysis was yellow, semi-solid, considerable mucus, neutral in reaction; occasional muscle fiber; some fatty acid crystals; actively swarming bacterial flora, with the bacilli predominating. The specimen was literally loaded with giardia cysts. Later analyses show the presence of active chilomastix accompanying the giardia. The gastro intestinal X-ray shows an irritable small bowel, a freely movable and tender cecum and a spastic and very redundant sigmoid. This patient has had twenty-nine stool analyses, ranging over a period of seven months. She has had ipecac, emetin, colonic flushings and three doses of neoarsphenamin. She has gained in weight, appearance and general feeling of well being. At times the stool has been free from organisms, but her latest analysis still showed some inactive chilomastix present.

NEUROPATHIC GROUP

Mrs. B., aged 43, a housewife, comes with the main presenting symptom of being so tired that the mere "watching of her step" on the street is exhausting. She has had attacks of sore mouth and tongue for years. The general lack of energy extends to her eyes and whole body. She simply has no energy and she cannot tell whether this is mental or physical. She complains of flatulence and some abdominal tenderness, especially around the umbilicus. There is precordial anginal pain. She is also subject to joint pains. She came from West Virginia to Los Angeles, where she has resided for several years. She has never been pregnant and passed the climateric uneventfully two years ago. She has never had any other serious illness. Her physical examination reveals the following salient points: Bp. 100-80; temperature, 98.8; pulse and respiration, normal; reflexes, normal; teeth, fair; small, white mouth ulcers; chest and heart, negative; general colon tenderness; old hemorrhoidal redundancy.

The blood examination shows: Hb. 77%; Wbc. 5500; Rbc. 4,440,000; Dif.-Poly, 42%; myel, 1; Eos. 7; monos, 48%; Trans. 2; CO_2 tension, 30; Wassermann, negative; urine, negative except for indican plus.

The stool shows: Acid reaction; blood 2 plus; cocci predominating; many yeast cells and a heavy infection of inactive chilomastix.

This patient has been treated and observed for nearly two years. She has shown almost a phenomenal progress, and yet there are periodic cycles of ill-feeling, invariably accompanied by the appearance of a few organisms.

METABOLIC GROUP

Mr. C., aged 43, gives his main presenting symptoms as general muscular weakness and mental inactivity of five years' duration. Attendant symptoms are: loss of appetite, constipation, low vision, some weight loss and general ill-feeling for seven or eight years. He has had no sore mouth or tongue. He thought he had malaria in 1898, though it may have been typhoid.

While living in Kansas in 1909 he had an attack of gastroenteritis not etiologically diagnosed. In 1912 he got an infection in his right hand. In 1914 he had an osteomyelitis of the jaw. He had a mild attack of influenza in season. On January 31, 1920, he became suddenly ill and unconscious. During the next two months he weathered a double lobar pneumonia, a peritonitis and bowel paresis that necessitated a puncture to relieve gas. This was followed by an abscess which opened itself in the posterior scapular region. Good nursing, blood transfusion and earnest grit pulled this patient through so that two months later he could be diagnosed pernicious anaemia and be allowed to die at peace with the world. Up to this time all other analyses had been made, but no stool investigation whatever had been carried out.

The only salient points to his examination are: Bp, 100-65; caecal and duodenal tenderness; a pelagrous appearing skin over the hands and forearms, with a CO_2 tension of 30. He has an anaemia, pernicious in type, more expressed by appearance than by blood picture, which was Hb 79%; Rbc., 3,920,000; poly, 67; monos, 30; Eos, 2; trans. 15. The stool was brown, neutral, mucus, blood 2 plus, with very heavy infection of yeast cells, inactive chilomastix and their cysts. Under treatment his weight has re-established itself and the patient has returned to his work feeling remarkably better. The latest analyses show no cysts or organisms.

ARTHRITIC GROUP

Miss D., age 40, presents the complaint of rheumatism of the joint deforming type. It began seven years ago while she resided in Denver. It has been slow but steady in progress. She thinks the beginning followed a severe cold, but is not sure that it did not go back to a severe attack of typhoid of the previous summer. The latter was accompanied by right-sided sciatica. She has had some pains in the liver region, but never any bowel cramps. There has always been severe constipation, much bowel gas and acid stomach. Course vegetables and potatoes always produce indigestion. Previous to her typhoid, she had always been well except for "nervous indigestion and billious attacks." Physical examination shows bad teeth, an old, healed right-sided apical chest dullness, a tender caecum, and severe deforming arthritis in practically all joints. She is completely confined to her bed in a doubled-up position and complains of joint pains on motion or at rest. The weight loss has been extreme. There is nothing in blood or urine of a differentiating value.

The stool is grayish, neutral, blood three plus, many fatty acid crystals, many motile spirillar organisms, and abundant active chilomastix and giardia cysts. The treatment has not been as complete as desired, but under it the pains are gone and there has been considerable return of motion. No cure of arthritis of this type could ever be expected, but its amelioration is grateful and its prevention would be an epoch-making Godsend to man.

DYSENTERIC GROUP

Mrs. E., aged 35, from Minneapolis, Minnesota, comes with the main and practically only presenting symptom of a severe, watery diarrhoea, which has existed for about eight months. There is no pain or tenesmus with the movements, but considerable bowel gas. There are always several to many movements daily. This dysentery is influenced by food taking, the worst type of which is fruit. At times there is nausea, with much mouth mucus and a general feeling of anorexia and loss of strength. She tires easily on exertion and does not understand why she should be so weak. Her previous history is that of typhoid at fourteen years of age, with an appendectomy at the age of twenty. She had one miscarriage, or tubal pregnancy, which was accompanied by a pelvic operation. There has never been a subsequent conception. Her physical examination reveals only a few important points. Her blood pressure is 100-65; her abdomen is tender over the cecum, duodenum and sigmoid. There is marked flatulence over the above regions and considerable spasticity over the sigmoid at the brim of the pelvis. Her blood examination is not of importance. Her weight loss is characteristic to dysentery. The stool examination shows a grayish-yellow liquid with 2 to 4 plus blood. It is faintly alkaline, with considerable mucus, a few leukocytes, and loaded with giardia cysts, active chilomastix in abundance and probably a few Trichomonas intestinalis. This patient has had treatment for five months, has gained back her normal weight, has lost her dysentery, and is improved in every way. The parasites have practically disappeared from the stools. However, a 2 plus blood reaction is still present.

TREATMENT

The treatment cannot be satisfactorily carried out until a thorough knowledge of the habitat and chemistry of the organisms is understood. The Giardia lives principally in the duodenum, where it attaches itself by its sucking disc to the cells of the duodenal walls and glands. I have found its cysts in the amputated gall-bladder in one heavily infected case. The jejunum and ileum are undoubtedly invaded at times by the billions of organisms. Based upon this habitat, one can readily understand why a colon flushing is so futile. The chilomastix resides more or less in the lower small intestine, and very often fairly swarms in the colon. I have found it deep in the crypts of two appendices and in a loop of ileum respectively in three cases on which surgery was necessary. Wenyon [5] found this organism deep within the crypts of Lieberkuhn and possibly invading connecting tissue. The trichomonas seems to thrive in both the large and the small bowel. Boyd [10] has shown that this organism will not grow in a bile-stained suspension or one slightly acid to litmus. With the above factors in mind, the general points of treatment are better understood. There is no specific drug to be used, but a skillful combination of several is of great value, but not entirely satisfactory. The first remedy to be discussed is "Ipecac," with its active principle, emetin. Powdered ipecac is drastic and too disagreeable to be given outside of routine hospital treatment. Emetin hydrochloride in one-third to one grain doses intra-muscularly or into the vein, once or twice daily, for ten days is very helpful in any protozoan infection. Recently Bonaba [11] gave a trichomonas infected child of four years of age a 4 cg. dose of emetin daily on two consecutive days. There was considerable toxic shock, but he claims the organisms definitely disappeared from the stools. The double iodide of emetin in two or three grain doses at bedtime

after a light supper is very effective. Often these tablets must be broken and taken in capsules to insure solution in the bowel.

Along with ipecac, the bile salts in full doses given two or three hours after meals are of great value and are routine in my practice.

On the sixth or seventh day of the emetin treatment, in the severe cases, a course of three doses of neo-arsphenamine is begun. These doses are medium in size and usually given at about five-day intervals. In the mild cases, one dose may suffice.

Thymol in thirty to sixty grain doses, at weekly or bi-weekly intervals is of much value. This treatment should be preceded by three days of a fat-free diet. Thymol absorption and subsequent poisoning readily occur with alcohols and fats. After a brisk saline cathartic, the other lines of treatment may be continued.

Calomel in large doses followed by catharsis removes organisms for the time, but they soon reappear in the stools.

Methylen blue by the stomach has very little value. As a colon lavage in solutions of 1:1000, it is of more value. By the duodenal tube, it is helpful still more.

Turpentine by mouth in ½ to 1 dram doses is effective as shown by Escomel,[12] but I have always been too much afraid of kidney damage to allow its use in huge doses.

In the case of the giardia and chilomastix, I have found the duodenal lavage of great value. Almost all the suggested solutions have been used. Methylen blue, oil of chenopodium, plain physiological salt solution, 33 per cent magnesium sulphate solution, and 25 per cent honey solution, are all exceedingly helpful. For the suggestion of the honey solution, I am indebted to my friend and college mate, Dr. Thomas H. Glenn, who had proven its efficiency in vitro. After the appropriate dose of above solutions has passed into the duodenum, then 500 to 1000 cc. of salt solution is allowed to follow through the duodenal tube. In a very short time the free and continued bowel movements eliminate billions of stunned or killed organisms. If this process is repeated in two to four weeks, the patient's progress will be more marked.

The treatment of the colon varies. Where the organisms swarm in the stools, there should be daily flushing of the bowels by using one or two quarts of soap-suds solution to which a dram of turpentine has been added. Of the same value is the use of a retention enema of one quart of kerosine. This may be retained over night without any ill effects to the patient. Another good enema is one quart of a 1:3000 solution of ichthyol. I also use a small, soothing, but protozoa-destroying retention enema containing fifteen or twenty grains each of thymol iodide and camphor in two ounces of olive oil as a nightly retention. This may be repeated at intervals for a month or six weeks. When there is rectal tenesmus or hemorrhoidal trouble, I use with much success this rectal suppository containing one-half to one grain of powdered opium, three grains of pulverized calamin, and two grains of tannic acid, made up with a sufficient amount of cocoa butter. A suppository at bedtime or twice daily in the most severe cases will give great relief and promote the healing of any low ulceration.

The diet must be chosen to suit the type of case. On account of the chronic nature of these infections, no fixed diet will be tolerated by the patient. The dysentery group demands the diet of any inflammatory colitis. The arthritic and metabolic groups are all undernourished and their chief need is food. The neurologic and dermatologic groups generally require a careful search into the food types most poorly digested. Here the stool analysis will usually tell a better and more reliable story than the patient. The vernacular "ptomaine poisoning" belongs chiefly to protozoan or other parasitic bowel disturbance and shows the periodicity common to these infections. It is at these periods that a chronic appendix, inflamed gall bladder, latent duodenal or other bowel ulcer, breaks down under the strain and an acute inflammatory process results with its attendant sequelae.

I am convinced that diet alone cannot drive these organisms from their host. They have modified the intestinal chemistry to suit their needs and consequently the host and not the organisms suffers most in our attempt to change the reaction of the bowel tract. In many cases, a diet of buttermilk and Bulgarian bacilli will kill the patient before the organisms are dead. Until our knowledge of the chemistry of foods undergoing pathologic digestion is a little understood, we must still summon to our aid a few intestinal parasiticides in ridding the system of these pathogenic organisms.

In summing up the results of this work it is found that 17 per cent of the cases were not really under treatment and are not included below. One hundred and twenty-four cases were treated from a few weeks to two years. Of this number, 66 per cent. were made definitely better under treatment. Fifteen per cent are clinically and up to the present time analytically cured. Nineteen per cent were practically unimproved, both clinically and microscopically. One great obstacle to treatment is its chronicity. Physicians as well as patients have not the required stamina and determination to work on in the face of defeat after defeat. Cheerful determination coupled with a recognition that a chronic disease is being treated must be constantly in the minds of all concerned if a cure is to be expected. Our great clinics and clinicians should not shirk their responsibility. They should accept these cases as problems even though quick and spectacular results are not demonstrable. Medical schools should train students to recognize the common protozoan parasites. Medical men should do routine analytical work to recognize mild and incipient cases and thereby fulfill our full measure of responsibility to the public in the prevention of disease.

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THE ETIOLOGY OF PARENCHYMATOUS NEPHRITIS

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(Concluded from Page 369, September, 1921)

The diagnosis was advanced parenchymatous lesion of the kidneys, with marked uræmic manifestations, without edema. Certainly it can not be urged that the edema of acute nephritis is due to diminution of renal function. Neither is diminution of urinary output due to renal disfunction, but rather is due to retention of fluid in the tissues. In view of the cases reported by Franke and the young woman reported above, it would seem that acute nephritis should be considered a general disease, the exact nature of which is unknown. It involves the general tissues of the body, but it may not involve the kidneys, although, of course, in the majority of instances it is attended with a decided involvement of the kidneys, which seem to be especially susceptible to the action of the poisons causing the general condition.

No useful object would be gained by discarding the term nephritis, which, through usage, has come to indicate the definite picture that it does; but a study of the causes of nephritis necessitates the assumpiton of the question as to whether or not the kidneys are of primary importance in the disease. A search for the actual causes of nephritis will undoubtedly be successfully consummated through investigations directed elsewhere in the body, instead of entirely along the line of renal function or pathology.

Concerning the etiology of nephritis, it is now generally accepted that bacterial infections play a much larger ethiological role in relation to parenchymatous kidney disturbances than was formerly believed. While exposure to cold and alcoholic excesses have been urged as a factor, they undoubtedly have no direct action upon the kidney, but rather indirectly as they may influence the occurrence of infections. This has been pointed out by Christian,[6] who states that infections of various sorts cause most cases of acute nephritis. Infections of the upper respiratory tract, tonsilitis and severe nasal infections are probably the most common causes. The streptococci also are an important factor in acute kidney disturbances.

Ophuls[7] states that the cause of true nephritis is continued bacterial septicæmia and the lesions in the kidneys are probably due to rapid bacteriolysis and incidental liberation of large doses of toxic material in or about the affected glomeruli. The type of nephritis described by Baehr in infectious endocarditis is not a true parenchymatous nephritis.

In eighty-one cases Hill[8] gave tonsilitis as the cause of twenty-two cases, and in twenty-six others found that all had chronic tonsilitis. There is an interesting parallelism between the ages in which upper respiratory tract infections generally occur and the ages in which acute, subacute and chronic parenchymatous nephritis occur; especially if it be borne in mind that the exanthematous diseases, such as scarlet fever and diphtheria, present tonsilitis as an important complication. Such diseases occur in early life, partly on account of their widespread dissemination and pronounced contagiousness, partly because the tonsils and lymphoid tissues of the throat undergo more or less atrophy by the age of 40, so that the tonsilitis factor in acute nephritis should wane with advancing age.

I have attempted to analyze two hundred cases of nephritis, among which twenty-six were acute parenchymatous nephritis and forty-two were subacute and chronic parenchymatous and diffused nephritis. In acute nephritis the incidence, according to age in twenty-six cases, is as follows:

TABLE I.

Age.	No. cases.	Percentage.
1 to 10	0	0
10 to 20	6	23
20 to 30	10	38
30 to 40	5	19
40 to 50	4	15
50 to 60	0	0
60 to 70	0	0
70 to 80	1	3.7

Over 50 per cent between the ages of 10 and 20.

Note Table I.—The one patient in the eighth decade with acute nephritis suffered a preceding tooth infection.

TABLE II.

Subacute, chronic, parenchymatous and chronic diffuse nephritis—forty-two cases:

Age.	No. cases.	Percentage.
1 to 10	1	2.3
10 to 20	3	6.9
20 to 30	5	11.5
30 to 40	8	18.4
40 to 50	11	25.3
50 to 60	8	18.4
60 to 70	2	4.6
70 to 80	4	9.2

In analyzing the various cases of nephritis from an etiological standpoint, difficulty was found in locating a definite etiological factor, partly due, I believe, to the fact that at the time the histories were taken, attention had not been especially directed to the possibility of upper respiratory tract infection as a factor.

TABLE III.

A tabulation showing history of previous infections in patients with parenchymatous nephritis:

Previous Diseases.	In 23 cases of Acute Parenchymatous Nephritis.	Per cent.	In 42 cases of Subacute, Chronic Diffuse Parenchymatous Nephritis.	Per cent.
Malaria	1	4.4%	2	4.8
Measles	9	39.6%	19	45.6
Mumps	5	22 %	10	24
Diphtheria	3	13.2%	4	9.6
Smallpox	0	0	1	2.4
Whooping Cough	7	30.8%	9	21.1
Tonsilitis	7	30.8%	7	16.6
Bronchitis	0	0	0	0
Pneumonia	2	8.8%	5	12
Influenza	7	30.8%	8	19.2
Meningitis	0	0	0	0
Tuberculosis	1	4.4%	3	7.2
Head Infections	0	0	0	0
Syphilis	2	8.8%	6	14.4
Gonorrhea	3	13.2%	4	9.6
Typhoid	1	4.4%	5	12
Alcoholism	2	8.8%	9	21.1
Chickenpox	1	4.4%	0	0
Bichloride Poisoning	6	26.4%	4	9.6
Rheumatism	0	0	20	4.8
Endocarditis	0	0	22	4.8

However, it may be noted that the patients had previously suffered from various infectious diseases as shown in Table IV.

TABLE IV.

Incidence of previous infections in twenty-four cases of acute nephritis:

Case No.	Malaria.	Measles.	Mumps.	Diphtheria.	Scarlet Fever.	Chickenpox.	Smallpox.	Pertussis.	Tonsilitis.	Pneumonia.	Influenza.	Tuberculosis.	Tooth Infections.	Typhoid.	Alcoholism.	Bichloride Poison.	Gas Poisoning.	Antrum Infections	Ear Infections.	Sepsis.	Syphilis.	Total.
1		×	×	×	..	×	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	5
2		×	..	..	..	..	..	×	×	..	×	..	..	..	..	..	..	..	..	..	..	4
3		×	..	..	..	..	..	..	×	..	×	..	..	..	..	..	..	..	..	..	..	3
4	..	×	×	×	×	×	..	×	..	×	×	..	..	×	..	..	..	..	..	..	..	9
5	..	..	×	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	2
6	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	1
7	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	×	..	..	2
8	×	..	..	..	..	..	×	..	..	×	..	..	..	..	..	..	..	..	..	..	..	3
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	1
10	..	×	×	..	..	..	..	×	..	..	..	..	..	..	×	..	..	..	..	..	..	4
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	1
12	×	×	×	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	4
13	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	2
14	..	×	..	..	..	×	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	3
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	1
16	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	1
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	1
18	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	1
19	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	1
20	..	×	×	..	..	..	..	..	×	..	..	..	..	..	..	×	..	..	..	..	..	4
21	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	1
22	..	×	×	..	×	..	..	..	×	..	×	×	..	..	..	..	..	..	..	..	..	6
23	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	1
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	1

Of course, it does not follow that because a person with nephritis had previously suffered from syphilis, or measles, or malaria, for example, that there existed a causal relation. The occurrence of such diseases as measles and influenza in a patient can have little bearing because, in the statistics bearing on those diseases, nephritis is rare. It is interesting to note that over 30 per cent of the acute cases in Table III. had suffered from tonsilitis which, theoretically, should be fraught with greater possibilities of chronic absorption and acute exacerbations. In Hill's series of eighty-one children 20 per cent definitely followed tonsolitis and 21 per cent more showed pathological tonsils.

I freely admit that from the analysis of sixty-five cases of parenchymatous nephritis no generalization may be drawn. However, one may be justified in making a suggestion that stricter account should be taken of the occurrence of infections such as tonsilitis, inflammations of the upper respiratory tract and accessory sinues and teeth in relation to this type of renal disturbance.

Chronic interstitial nephritis is more properly attributable to the wear and tear of life and abnormal metabolic conditions. Much may be written of the effect upon the blood vessels and kidneys of the various factors which constitute wear and tear in this sense—of the relation between the daily food intake measured in calories and expenditure of energy measured by the same units—of the effect of waste products of muscular activity—but these considerations have no bearing on parenchymatous nephritis, which seems to be related nearly entirely to infections, or, in a small percentage, to the inorganic, corrosive poisons.

In conclusion, I take the liberty of urging the consideration that the action of the poisons which cause parenchymatous nephritis act upon the tissues of the body generally, rather than upon the kidneys alone—that the kidneys are only incidentally involved, but that nevertheless, while they are very susceptible, they may escape in whole or in part, and that the symptoms of acute nephritis do not arise from the kidneys, but are the manifestations of a general intoxication.

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"Sure cures" for tuberculosis are probably as old as the disease itself, says the U. S. Public Health Service. Hypophosphites, creasote, "lymph," inhalants, serum, and the Friedman cure have all come—and gone. Just now some old devices in new forms are being acclaimed in the southwest. But—"I can't say yet what medicine cured me," said the testimonial writer. "I ain't heard from but three sure-cure companies yet an' I'm waitin' for bids from the advertising agents of two more."

CALIFORNIA'S CANCER PROBLEM
(Cancer Week, October 30 to November 5)

By ALSON R. KILGORE, M. D., San Francisco.

California is reported to have the highest cancer mortality rate of any State in the registration area outside of New England. Our rate of over 97 per 100,000 population is nearly 25 per cent higher than the average over the country. This situation is perhaps not as bad as the figures indicate. Cancer is pre-eminently a disease of those in and past middle life, and undoubtedly California has a larger proportion of older people in the population than is found in older communities. Many who have reached the age of retirement from active life select California as a place in which to take their enjoyment. San Diego, for instance, well-known playground of the retired wealthy, has a cancer rate nearly twice as high as the average for the entire State. And for those of us who live and work in California, if our climate and the outdoor life we lead in it keep us well and able to ward off the infectious diseases of youth and young adult life, more of us have opportunity to live into middle life and beyond the so-called "cancer age."

Whatever the explanation, the California rate is very high, and that fact presents at the same time an opportunity and a duty to the medical profession—we must reduce our cancer death rate. Not much reduction can be expected from further improvement in treatment. The surgical principles for the various forms of cancer are well established. Some improvement may be expected in the use of radium and the X-ray, but the chief decrease in cancer mortality must come from education of the public about the facts of the disease. The layman must be convinced that early cancer is curable. Every cancer in its beginning is confined to one point. Entirely removed before it begins to metastasize, it is permanently cured. The layman must be taught the earliest danger signals of cancer and taught to regard them with far more apprehension than he now does a pain in the appendix region.

Bloodgood has pointed out that as popular knowledge about cancer has spread among the public from which his patients are drawn, the proportion of malignant to benign affections of the breast presenting themselves has significantly changed. Twenty years ago women came only when forced to do so by advancing, unmistakable cancer, so that 70 per cent of all breast cases were malignant and only 30 per cent benign. As the importance of early treatment of any lump in the breast has become generally known, this situation has changed. Women are coming with earlier cancers, cancers often so early that their physicians have been unable as yet to make a positive diagnosis, and many more have come with benign tumors for diagnosis, so that now the proportion is reversed. About 60 per cent of breast lesions in his clinic are benign and only 40 per cent malignant. Whereas in the earlier years of the clinic, it was rare to see a breast cancer before axillary metastasis had occurred, now over 20 per cent of the cases of highly malignant scirrhous and medullary cancers are operated before the axillary glands show involvement. Over 60 per cent of these early cases are permanently cured.

For comparison, inquiry has been made into this ratio at the University of California Hospital. During the past few years at that clinic, 65 per cent of the breast lesions have been cancer and 35 per cent benign. If this comparison is worth anything, therefore, California stands in the matter of public knowledge about cancer where certain eastern communities stood fifteen or twenty years ago. And we have a definite task to perform in educating the California public so that we, too, shall treat our cancer patients earlier and have opportunity to treat more pre-cancerous lesions of the breast before they undergo malignant change.

The American society for the control of cancer exists for exactly this purpose. Its work was largely suspended, like many other such activities, during the war, but its organization for an intensive campaign of public education about cancer is now being rapidly completed.

From October 30 to November 5 of this year, the society plans a nation-wide intensive campaign of publicity. Every possible means of reaching the public with the facts of cancer will be utilized, and this campaign will be a success to just the extent that it receives the support of the medical profession, and the cancer society offers no apology for asking this support. Every physician can at least see that his patients are instructed. Brief pamphlets especially prepared for the lay reader will be sent to individuals on request from the office of the society at 25 west forty-fifth Street, New York. Quantities of these pamphlets may be secured at cost of printing by physicians for mailing to lists of their patients. No better method of cancer education exists, for the endorsement of a physician in whom a patient has confidence will secure attention not equaled by any other method of presentation.

During cancer week the aim will be to present as simply as possible the essential facts about the nature of cancer—to urge that it is a curable disease, but curable only if treated early; and to emphasize the few most important early danger signs:

1. The black elevated mole which gives rise to melanotic tumors, should be removed to protect against cancer.
2. The unhealed crack, or sore, or pimple on the lips or in the mouth, should not be allowed to go without attention longer than three weeks.
3. The horny wart on the face or hands of elderly people, better removed before change occurs, but certainly immediately on the slightest increase in size or change in character.
4. Any lump in the breast. Not all lumps are cancer, but even expert physicians cannot always tell by examination which are cancer and which benign. It should be especially urged that *early breast cancers are usually painless* and that to wait for pain is to wait for incurability.
5. Chronic and persistent indigestion may mean gastric ulcer, sometimes the forerunner of cancer.
6. Irregular bleeding or unusual discharge, especially near and after the menopause, calls urgently for careful examination.
7. Bleeding from the bowel may be due to hemorrhoids, but it may be due to cancer of the bowel. Careful, thorough examination is the only way to tell which is present.

CHRONIC LESIONS OF THE LOWER LIP*

By EDWIN I. BARTLETT, M. D., San Francisco.
From the Division of Surgical Pathology, Department of Surgery, University of California.

Lesions of the epithelium of the lower lip may be divided into three groups: (1) congenital, (2) acute, (3) chronic. With the congenital lesions we are not concerned in this paper, unless they take on changes such as ulceration or sudden growth. Acute lesions do not cause concern, because they yield to medical treatment and are all cleared up in a few days. By chronic lesions is meant any lesion with a duration of one month or more. According to Bloodgood,[1] any lesion that is cronic is a cancer possibility; therefore, our discussion has to do with lesions that are cancerous or that have strong cancerous possibilities.

The mortality of carcinoma of the lower lip should be lower than the mortality of carcinoma anywhere else in the body, because early removal of the carcinomatous growth with a narrow margin of healthy tissue yields 100 per cent cures.[2] Any lesion on the lip is recognizable almost from its beginning, because of its position on an exposed portion of the body. Theoretically there should be no mortality in carcinoma of the lower lip, while in fact, many individuals die of this curable disease.

These facts are well known and a great deal has been written about early recognition and early operation. In spite of these contributions, valuable time is lost and cases progress to the hopeless stage through the employment of preliminary treatment with salves, X-rays, radium, and etc. Finally, after the lip has been operated, additional time is lost waiting for the metastatic glands to show sufficient size or hardness to satisfy the physician that they are metastatic. This delay and neglect in treating the lip lesion may be traceable in many cases to failure on the part of the patient to come early to the surgeon, or to many other causes over which the surgeon has no control. In the matter of the gland operation, the whole responsibility usually rests upon the surgeon and the only factor over which he has not control is the refusal of the patient to submit to operation.

The evidence that medical men are sometimes responsible for delay has led me to attempt an investigation of the reasons. There seem to be two main reasons, namely, a feeling that the neck operation is not necessary excepting in cases with clinically definite metastases, or with rather large or exceptionally hard glands beneath the chin; and a hesitancy towards subjecting the patient to a severe, extensive and mutilating operation with but little hope of a cure. It is the opinion of some physicians that many cases of carcinoma of the lip do not develop metastases. They are strengthened in their opinion by the statistics of Bloodgood (37%)[3] and Mayo (23.38%),[4] which show a very low percentage of secondary gland involvement. Furthermore, many of the reported operations for neck glands have been very extensive or very limited, and have yielded negative results, because the incomplete dissection only served to stir up the growth, or the condition was so advanced as to preclude any hope of cure, even with the most extensive surgery.

The great difficulty, therefore, is that there is no common understanding among us as to the proper indication for the neck dissection; and if we are not going to do routine gland dissection in every case of cancer of the lip, then it is imperative that we carefully study out and determine upon some definite criteria which will enable us to properly select cases suitable for a neck dissection.

Classification: Various classifications of chronic lesions of the lower lip have been given to us by students of this condition. The best known, those of Bloodgood and Mayo, are as follows:

Bloodgood[5]: 1. Benign. 2. Precancerous. 3. Malignant wart. 4. Cancer.

Mayo[6]: 1. Benign. 2. Precancerous. 3. Cancerous. 1. High degree of differentiation, 75 per cent. II. Moderate degree of differentiation, 50 per cent. III. Slight differentiation, 25 per cent. IV. No differentiation.

Bloodgood's classification, while based upon the pathological picture, is practically a clinical classification based upon the stage in which the disease is found. The reason for this unusual way of grouping is, that the type of treatment is determined by the stage in which the disease is found; that is, the stage of the disease determines the condition of the lymphatic glands that drain the area and, therefore, indicates the need or not of gland dissection. At one time, Bloodgood did a neck dissection in every case that showed any malignant change, but more recently he has pointed out that the malignant wart or very earliest cancerous change never has shown metastases, and consequently he has abandoned the neck dissection in the malignant wart.

These rules of treatment laid down by Bloodgood have never been questioned by those in a position to judge. Broders,[7] however, in reviewing the great mass of statistics of the Mayo Clinic, has come upon some interesting statistics in regard to cell differentiation; and with these figures he attempts to show that the prognosis depends somewhat upon the amount of differentiation. He has considered these findings in conjunction with the size of the lesion and the duration, and etc., but not from the standpoint of the stage of the disease which is, after all, the determining factor as far as liability to metastases is concerned. Moreover, his classification has been made on past statistics, and has not been used to determine the surgical procedure. It has seemed to us, therefore, that we cannot drop the study of the stage of the disease as our criterion for treatment, and if we are to use the differentiation of cells at all, it can be used to advantage, mainly, in the group of cases in which the stage of the disease is doubtful, that is, the very next stage beyond the malignant wart. To this end we have expanded our classification, which is based upon the stage

* Read before the Fiftieth Annual Meeting of the Medical Society of the State of California, Coronado, May, 1921.

of the disease to include cell differentiation, and with our limited statistics have endeavored to make a sort of preliminary report of our findings. Our ** classification is as follows:

1. Clinically benign.
2. Precancerous (clinically doubtful).
3. Cancerous (clinically doubtful or clinically cancerous).
   a. Malignant wart (very early).
   b. Fully developed, not infiltrating muscle.
      (1) High degree of differentiation.
      (2) Moderate degree of differentiation.
      (3) No differentiation.
   c. Fully developed, infiltrating muscle.
   d. Advanced (usually hopeless).

We have adopted the phenomenon of muscle infiltration arbitrarily, and not on the basis of any proof that muscle infiltration is significant, but because it does show us that the disease is no longer superficial, and perhaps the dissemination is more sure and more rapid, when the cancer cells are among the muscle bundles, where they are constantly massaged. We have not considered cell differentiation as a determining factor in treatment of tumors infiltrating muscle, because we believe that the fact of muscle infiltration is sufficient evidence of the degree of malignancy.

Diagnosis—Clinically benign lesions: To repeat, any lesion lacking the usual marks of malignancy, which has persisted for one month, in spite of palliative treatment should be considered as having malignant possibilities.[8] Among these lesions of more than one month duration, a large majority are proved to be benign, when examined under the microscope; clinically, however, they are not benign, because they are chronic. Without the aid of the microscope, therefore, the only lesions of the lower lip, which can be diagnosed clinically as benign, are the acute lesions.

Precancerous (Fig. I and II)—From the clinical standpoint, this group includes all lesions which have persisted for one month in spite of palliative treatment, and which have not developed or failed to show the usual clinical signs of malignant change. That is, a wart, a scab, or an ulcer, which does not show induration about the edges or base, or which does not show an irregular rodent border, cannot be properly classified clinically among the malignant conditions even though there is considerable glandular enlargement. (Fig. III) The term, therefore, is a clinical expression, but the diagnosis of precancerous lesions, that is, the proof that the lesions are benign, is entirely a matter of microscopic study.

Malignant wart (Fig. II)—This group includes lesions, all of which are chronic, and some of which show the clinical picture of malignant change, such as induration or deep ulceration, and which, under the microscope, shows the very earliest evidence of malignancy. That is, as Bloodgood points out,[9] there is a definite change at the tips of some of the papillary downgrowths from the normal relationship between the supporting connective tissue frame-work and the epithelial cells. The basal layer cannot be identified as such, and the large squamous or prickle type of cell is in direct contact with the supporting connective tissue.

Fully developed, not infiltrating muscle—In this group the clinical picture of chronicity and induration is practically always present, while the pathological picture shows all gradations from beginning infiltration of the underlying connective tissue to a fully developed, but quite restricted cancer. Here are included only those cancers where there is a demonstrable margin of connective tissue between the farthermost downgrowth of epithelial cells and the underlying muscle. The presence or absence of glandular swelling in the neck has no bearing on the diagnosis or the immediate treatment.

(Fully developed and infiltrating muscle) (Fig. III)—The lesions in this group are invariably diagnosed clinically as malignant. Pathologically, we include all fully developed cancers (excepting the recurrent or the very extensive cases), which show an infiltration of the tumor cells into the underlying muscle, or which show such a close relationship with the underlying muscle layer that there is no margin of connective tissue left between the tumor and the muscle. The neck glands in the submental or submaxillary regions may be palpable, but the presence of large clinically demonstrable metastatic glands would exclude the lesion from this group. The microscope may or may not show cancerous infiltration of the glands.

Very advanced—This group includes all cases that are clinically advanced, that is, lesions involving the whole of the lip, all cases of definitely clinically metastatic glands, all cases of recurrence.

Treatment: Clinically benign lesions, that is, ulcers, scabs, cracks, etc., which do not clear up readily, but which have not been present long enough to be classified as chronic, should be treated palliatively and not surgically.† Very soothing applications only should be used, because it has been repeatedly demonstrated that these lesions will heal more quickly and surely when protected and when kept covered with white vaseline, than when treated with irritants and cautery. Moreover, there is room for suspicion that irritants, such as silver nitrate, X-ray exposures, and caustics, oftimes lead to the development of cancer.[10] A very high percentage of cases of cancer of the lip give a previous history of caustics, usually silver nitrate, and many of the patients volunteer the statement that the change for the worse took place at the time of the beginning of the caustic treatment. Of all the soothing applications that we have, none seem to be so efficacious as plain white vaseline, copiously applied. If such lesions fail to heal by the end

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† We are inclined to look upon untreated lesions of one month's duration without induration or lacking other changes suggestive of malignancy as most likely benign, and frequently delay two to three weeks while the lesion is being treated with mild salves. If there is not a decided change for the better, surgery is resorted to without delay. Every lip case has a Wassermann blood test. If the test is positive, antiluetic treatment is started immediately. If there is not a practically complete disappearance of the lesion by the end of seven to ten days following administration of arsphenamine and mercury, the lesion is considered as not luetic, and surgery is employed.

of one month, then they belong in the precancerous group, and surgery is required.

Precancerous and malignant lesions, as has been pointed out before, are not distinguishable clinically, except where the malignancy is advanced. Thus cases which fail to meet the requirements for the clinically acute, fall into these groups and all require surgery, regardless of the clinical findings.

Taking into consideration first the doubtful or the very small fully developed carcinomata, our plan of procedure is as follows: A "V" as described by Bloodgood or a rectangular piece as advocated by the Mayo Clinic, is taken which includes the lesion, and at least half a centimeter of healthy tissue on all sides, the amount of margin depending upon the size of the lesions. If a "V" is taken, the point should extend well down onto the chin, because a blunt "V" has a tendency to leave a notched lip. The depth of the "V" should be considerably greater than the breadth (Fig. III). The cut edges are united by very fine silk sutures, taken well back from the margin and passing through the skin, muscle, and mucous membrane. These are tied loosely, but with sufficient tension to assure proximation of the cut muscle surface. As a rule, not over three of these deep sutures are required. In addition, the skin is very carefully approximated by means of a number of superficial, very fine silk sutures. No attempt is made to carefully approximate the mucous membrane edges, because the scars of the mucous membrane are not mutilating, because the additional suture material, especially in the mouth, adds to infection and, lastly, because the mucous membrane unites kindly and quickly without the careful approximation necessary in the skin. Tension is taken off from the sutures by means of a "butterfly" adhesive appliance. Upon examination of the microscopic sections and the discovery of a benign condition, the patient is told that his condition was not cancer, and that he is cured.

Fig. I.—Precancerous. Note extensive papillary downgrowth. Basal cell layer everywhere preserved. Round-celled reaction, mild. Compare with Figure II. (Path. No. 1946.)

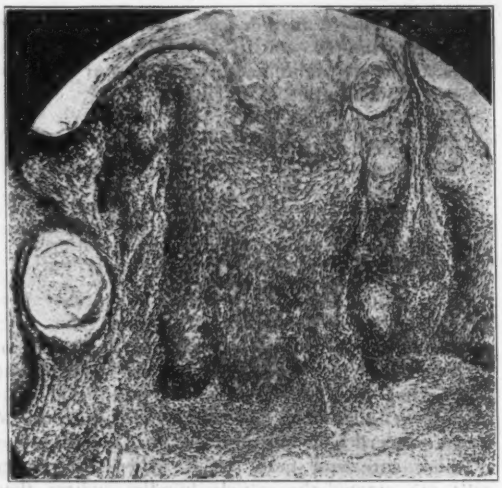

Fig. II.—Malignant wart. Note intense round celled reaction. Differs from Fig. I in that cells at tips of papillary downgrowths have lost their basal characteristics. (Path. No. 1946.)

Fig. III.—Infiltrating muscle. Duration 3½ months. 50% differentiation (Broders' Group II). Practically no induration. Diagram showing margin given in "V" excision. Primary neck dissection showed no metastases.

Cancerous—1. *Malignant Wart:* The "V" is taken as in the preceding type, and upon examining the tissue under the microscope the patient is informed that he is cured. No gland dissection is done in this group even though there

are palpable glands beneath the chin. The gland dissection is omitted, because from statistical studies (Bloodgood's and our own), none of these cases have shown metastatic glands in the few instances where these glands have been removed and, as far as we can determine, none of these patients have afterwards developed carcinomatous glands.

2. *Fully developed, not infiltrating muscle*—Since most of these lesions are small, the most common type of local operation is the "V." In the examination of these specimens, the two important points for consideration are the relationship with the muscle layer and the degree of differentiation. If the muscle layer is not invaded and there is a high degree of differentiation, the patient is told that he is probably cured, but that he will have to be kept under close observation, and must report regularly at intervals of three months for at least a year and a half. If, at the time of operation, there are enlarge glands under the chin and they have not definitely disappeared by the time of the first visit (three months), the patient is advised to have the neck dissection done. If there is very little or no differentiation of cells in the new growth, the patient is advised to have immediate gland dissection, that is, within a week or two. Two cases out of four in this class had neck dissection immediately following the lip operation. A complete dissection of the submental triangle and one or both submaxillary triangles was done. Neither had the deep cervical chain disturbed, because none of the glands at operation gave any gross evidence of involvement; neither had microscopic cancer in the glands removed. The other two cases did not have neck dissection. One case showed no differentiation of cells; the other three showed 75 per cent differentiation. One showed enlargement, clinically, of the glands. This was the one without differentiation, and one of the two that had neck dissection.

Fully Developed, Infiltrating Muscle—Since practically every one of these cases is looked upon clinically as cancer, the patient is told that he will undoubtedly have to have a neck dissection, but that it is safe to wait until the pathological report is made. Within a few days or a week after the primary lip operation, all of these cases are now submitted to gland dissection, that is, the submental and one or both submaxillary triangles are dissected. This rule is being followed out regardless of differentiation.

In the past, twelve of our cases (40 per cent) had palpable glands beneath the jaw. Ten had primary neck dissection, but only one of these showed microscopic cancer in the glands. One of the two remaining cases came back a few months later with larger glands than at the first operation; a neck dissection was done and gross and microscopic cancer was found. This patient is living and well today, two years after the neck operation. The other case refused the neck dissection and died of pneumonia two and one-half years later, without further enlargement of the glands or other evidence of neck involvement.

According to Broders' classification, the ten with primary neck dissection were grouped as follows: Group I—Four cases; Group II—Two cases; Group III—Four cases; Group IV—No cases. One case in Group III that showed practically no differentiation is living, and without evidence of gland involvement two years since operation. Of the two without primary operation, the one with secondary neck dissection, because of gland metastases, belonged to Group III, and the one which refused the neck dissection belonged to Group II.

The neck dissection in all instances was a complete cleaning out in one block of the submental triangle with one or both submaxillary triangles.

The remaining sixteen cases out of twenty-eight in the group showing muscle infiltration, either had no palpable glands in the neck or no record was made of the glands. Two of the sixteen had primary neck dissection and no cancer was found, microscopically. One had a secondary dissection, because of gland enlargement and local recurrence. Fourteen did not have neck dissection. The two cases with primary dissection are well, and without recurrence nine months and one year, respectively. The one with secondary neck operation and secondary local excision has been lost. Of the thirteen cases without neck dissection, one is well one year since operation, two are well two years since operation, and one well four years since operation.

In this group of sixteen without palpable glands, the grouping according to Broders is as follows:

Group I—9 cases: Five cases heard from and well, from one to five and one-half years since operation; none of these had a primary neck operation.

Group II—3 cases: Two cases heard from and well; one without primary neck well, four and one-third years since operation; one with primary neck operation, well nine months since operation.

Group III—3 cases: One case heard from and well one year since operation. This case had primary neck operation; the other did not have primary neck operation.

Group IV—1 case§: This case did not have primary neck operation, and has been lost.

In other words a statistical study of this group showing muscle infiltration, reveals the following interesting facts. Of all cases, regardless of enlargement of glands, 3.5 per cent will show metastatic cancer in the glands removed at the primary neck operation. Of the cases in which palpable glands are found beneath the chin, 17 per cent will show metastatic cancer in the glands at the primary operation, or develop neck metastases later if the primary neck operation is omitted. Six per cent of the cases without enlarged glands beneath the chin will subsequently develop metastic glands if the primary neck dissection is not done. This means that a man with a cancer of the lip in which infiltration of muscle can be demonstrated, has nine chances out of ten of escaping further trouble if only the local operation is done. If he has enlarged glands, he has a little better than eight chances out of ten of

§ Personal communication from Broders places this case in Group III.

escaping without further trouble, if he has a primary neck operation; and five chances out of ten of escaping, if he does not have a primary neck operation. Our studies neither prove nor disprove Broders' contention, because his group, showing 75 per cent differentiation, gave us one case that showed cancer in the glands at the primary dissection. His group that shows 50 per cent differentiation gives us one case that developed metastic glands secondarily in spite of the fact that he did not have palpable glands at the time of the lip operation. His group showing 25 per cent differentiation, gives us one case that subsequently had to return for neck dissection, because of enlarging glands. This case showed metastatic cancer, and since the glands were enlarged at the time of the lip operation, metastatic cancer might have been discovered at that time had a primary dissection been done. His Group IV furnishes us with two cases. One case was lost and may have died of cancer,§ but the other case was well after two years.

When we contrast these findings with the relative infrequency of fully developed cancer that does not infiltrate muscle, and the absolute freedom from recurrence, and the absence of metastases at the primary operation in that group, we feel justified in concluding that the chances for an absolute cure by the local lip operation only, when the muscle is infiltrated, are altogether too uncertain, and that the neck operation should be done in every case.

Advanced: Since all of these cases show rather extensive lesions and many show glands beneath the jaw, which are either clinically doubtful or clinically quite definitely cancer, the local lip lesion is invariably removed in a rectangular piece, and a minor or extensive plastic is done to restore the lower lip. In most instances the neck dissection is done at the same time, but in the few cases a few days are allowed to elapse to give opportunity for the patient to react from the anesthetic and operation, and then the neck dissection is done without considering the pathological picture. The neck dissection is started by cleaning out the submaxillary and the submental triangles. If cancerous glands in the gross are encountered during the dissection, or the glands are clinically malignant, then the whole of the deep cervical chain on the side of the involvement is removed. Our cases in this group, number four. One case refused neck dissection and is well today, two and one half years after operation. One was not given neck dissection, reason unknown. Two had dissection of the superficial triangles only in face of the fact that there were clinically involved glands in the superficial triangles. One of these two had a thorough dissection of both submaxillary and the submental triangles. Both are dead. Both belonged to Broders' Group III. (Under this division we have not included any cases that came to us on account of recurrence.)

The Gland Operation: Epithelioma of the lower lip metastasizes to the superficial chains, that is, to the glands lying on the external surface of the floor of the mouth. Involvement of the glands of the deep cervical chain is accomplished only secondarily by infiltration through the superficial chains. In other words no primary metastases from carcinoma of the lip are below the level of the posterior belly of the diagastricus muscle.‡ If this be true then the removal of the primary glands calls for a complete cleaning out of all gland-bearing tissue within the submental and the submaxillary triangles. By gland-bearing tissue is meant every scrap of tissue including vessels, nerves, salivary glands, etc., between the platisma on the outside, and the muscles of the floor of the mouth below. The only structures that are preserved are the hypoglossal nerve, where it crosses the floor at the hyoid cornu, and the lingual nerve, where it enters the triangle at the extreme upper edge at the posterior border of the mylohyoid muscle.

In secondary gland involvement, the metastases, almost without exception, take place in the glands along the upper portion of the jugular vein, but sometimes may appear in the subparotid group first. Obviously, there is no indication for disturbance of the deep group unless there is strong evidence at operation of involvement of the superficial chains. In case, however, of proper indications the deep cervical dissection should be done in one block, that is, all the gland-bearing tissue of the side of the neck in the rectangle formed by the thyroid muscles medially, the jaw ramus superiorly, the trapezius posteriorly and the clavical inferiorly should be taken in one piece. The roof to this space is the platisma and the floor, the deep muscles of the neck. With this gland-bearing tissue should be included the sternomastoid and the omohyoid muscles, the posterior belly of the diagastricus, the internal and external jugular veins, the external carotid artery, the lower pole of the parotid gland, and all the nerves except the vagus, the phrenic, and the spinal accessory. Any procedure less complete than this is inadequate, and is as little likely to give results as the removal of a part of a lymphatic chain for metastatic involvement anywhere else in the body. The lowest gland,[11] as has been repeatedly pointed out, is below the level of the omohyoid, and the highest lies buried in the lower pole of the parotid. The jugular glands lie in the sheath of the vein, and in case of metastatic involvement the vein wall is very early invaded.

We have proof that there is an appreciable delay between the initial metastatic invasion of the deep cervical chain and the passage of the metastatic cells beyond the lowest gland of the deep cervical chain. Therefore, all hope is not lost, when it becomes necessary to do a deep cervical dissection. Our failures have not been so often from internal metastases, as from failure to do complete chain removal, and especially is this true in the neck.

Mutilation is a bug-bear. In the first place the consideration of such a possibility should never be entertained by the surgeon, and if he cannot

‡ Very few cases have been cited where an epithelioma at the angle of the mouth has apparently metastasized to the subparotid group.

submerge this factor he is unfit to treat surgically malignant disease. In the second place there need be no mutilation resulting from either the superficial or deep-neck dissection. From the unilateral dissection there may be a slight asymmetry, while in the bilateral there is only the scar, which should be a line.

Summary: 1. Many cases of carcinoma of the lip are lost through failure to do the gland operation or through delay in doing the gland operation.

2. Failure or delay in gland operation is due to lack of definite understanding as to which cases need a neck dissection and which do not.

3. Classification for practical purposes must be based upon the stage of the disease.

4. Diagnosis must be based upon pathological studies.

5. Treatment must be based upon definite knowledge of the stage of the disease, as determined by the pathological studies of the primary lesion.

6. Gland dissection must be carried out by triangles, and no partial dissection of the triangles should be done.

7. Gland dissection should be done in every case of fully developed carcinoma, with possible exception of a few highly differentiated tumors, which are sufficiently restricted in their local growth as to fail to show muscle infiltration.

8. The extent of the neck dissection must be sufficient to take in all involved chains, and in case of superficial triangle involvement must include the deep chains.

9. There is no resulting mutilation from neck dissection.

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THE MOTAIS OPERATION FOR PTOSIS REPORT OF SIX OPERATIONS

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In my opinion this should always be the operation of choice where any power of upward rotation, no matter how small, of the globe is retained. Case 1 proves this.

There is no need before this section to go into detail as regards the technic of the operation. In this connection I wish to emphasize that this operation gives the closest possible approach to the normal associated action of the superior rectus and lid elevator.

The technic is covered so fully in Beard's Ophthalmic Surgery that it would be a waste of time for me to repeat it. In his summary on pages 247-250 he mentions having done the operation sixteen times and states, "The results in all of them are far and away the best I have ever obtained in this affection. The manner in which the free border of the lid keeps out of the way

Figure I (a)—Before operation. Note absence of corneal light reflex.

Figure II.—Right eye was same as left before operation.

Figure III.—Left eye was same as right before operation.

Figure I (6)—After operation. Corneal light reflex present.

Figure IV (6)—After operation, in attempt to look upward.

Figure IV (a)—Before operation, in attempt to look upward.

of the pupil, as the subject looks farther and farther upward is truly beautiful to contemplate." Further along he says again, "No matter how little there is (of upward rotation), the Motais operation is the one, in my opinion, that should be chosen. After the lid is once raised, the superior rectus develops more and more its proper function. Herein lies the explanation of a unique and most gratifying feature of the Motais method, viz., the constantly increasing enhancement of the effect for weeks and even months after the operation."

These quotations leave little to be said, except to report the results in my six operations.

CASE REPORTS

Case 1. Miss M. B., age 25, presented a complete ptosis of left lid, the result of falling on a button-hook in her third year. There was also a downward displacement of the globe. Upward rotation only 20 degrees as compared with 40 in the other eye. With the idea of increasing upward rotation, as preparatory to a Motais, two preliminary operations were done—a shortening of the superior rectus and a lengthening of the inferior rectus. After these vertical rotations were practiced for three months, by which time the upward rotation had reached 35 degrees. The Motais was done on May 20, 1919, without much trouble. The result was excellent, the pupil being uncovered even in extreme upward rotation. The brow, which was very high, gradually came down, finally nearly to same level as the other. This case had had two operations which must have been merely skin exsections, so that the lid hung from the brow like a curtain. This patient was shown at the 1919 meeting of the Pacific Coast Oto-Ophthalmological Society.

Case 2. J. J., age 6 years. Congenital ptosis of left lid. Upward rotation of globe normal. There is also a convergent squint. Motais on December 8, 1919, without trouble. Healing uneventful. One year later the excellent result was maintained, the pupil remaining uncovered even in far upward rotation. In primary position the lid aperture is only one-half millimeter less than that of the good eye. The convergent squint has practically disappeared. Fig. 1 (a and b).

Case 3. Mrs. H. S., a music teacher, who desired the operation for cosmetic effect. The drooping of right lid had been gradually increasing for fifteen years and now the aperture is only one-half that of the other side, even less when tired locally or generally. Motais done February 2, 1920, without trouble and with uneventful healing. On June 2, 1920, the palpebral aperture was 9.5 as compared with 10 millimeters in the good side —9 in extreme upward rotation.

Case 4. A. P., age 6 years. A case of bilateral hereditary ptosis with reversed epicanthus (lower lid overlaps upper) and convergent squint. The case is similar to Case 5 (whose picture accompanies this paper), only the deformity is much worse. I was unable to secure a picture of this little girl. The Motais was done on September 2, 1920, without trouble, and healing was uneventful. The usual effect was secured, namely an uncovered pupil even in upward rotation, while before operation she had to throw the head far back in order to see under the lid margin. Fig. 2.

Case 5. F. R., age 4. As stated above is similar to 4, only not so bad and no heredity. This case had had an operation on each lid by another ophthalmologist and also one on the nasal bridge for the epicanthal deformity. All were failures according to the mother's statement. I think no attempt should be made to correct the epicanthus till maturity as the growth of nasal bridge lessens it. This deformity in the father of Case 4 was hardly noticeable. Upward rotation of globes normal. Motais November 12, 1920. This case must have had the cornea injured during the operation, for he developed a large ulcer near upper border with hypopion. This, however, cleared up and is hidden by the upper lid. The pupil remains uncovered even in upward rotation, as shown by the picture. The contrast in the two sides gives the before and after appearance. Fig. 3.

Case 6. L. N., age 6 years. In this case the ptosis was the result of injury when three years of age. At that time she fell on a penholder which penetrated the orbit between the globe and upper wall. It broke into many pieces, several of which were removed by a general surgeon immediately after the injury. Several weeks later the proptosis remaining, she was brought to me, and study of the case showed a large fragment in the apex of the orbit. This at operation was found firmly set in the optic foramen and was removed. Of couse the eye was permanently blinded. Motais was done on February 24, 1921, without trouble. In this case instead of pulling the upper lid down to the lower to protect cornea, I pulled the lower lid up. This, I think, is the cause of a slight overeffect, causing about a two millimeter opening during sleep. Outside of this there was no trouble, the aperture is equal to that of the other eye, even in upward rotation, while before operation it was three millimeters less. During the three years' time the blind eye diverged widely, to correct which I shortened the internus on April 25, 1921, the result of which is, at this date, uncertain. Fig. 4 (a and b).

NOTES ON PRE-NATAL CARE

From the Fresno Clinical Group, Fresno, Cal.
By G. CARL H. McPHEETERS, M. D., Fresno, Cal.

It is a frequent occurrence in the daily practice of most physicians to hear women express their reluctance to bear children. Usually one or two of the following reasons are expressed:

Fear that child-bearing will

1. Spoil the figure.
2. Undermine the general health.
3. Keep them at home for nearly a year.
4. Interfere with their work outside the home.
5. Interfere with their social pleasures.
6. That they might not receive proper care during pregnancy, confinement and the puerperium.
7. It is also commonly said, "We cannot afford any children."

In the minds of many American women these constitute real excuses. The actual underlying reason is the tardy development of Obstetrics as the practice of medicine. Although the oldest of the branches of medicine, Obstetrics is still as little developed among the profession in general as psychiatry, radium therapy and others of the newest branches of medicine.

To overcome the excuses of the childless, physicians should develop the art of Obstetrics to a point where it at least has more to offer her than mere midwifery. It too frequently happens the very minimum of service is rendered in Obstetrics, so little in fact, that not only the patient, but her relatives and friends, are often anxious about the outcome of her confinement, and fearful to undertake a pregnancy themselves. There is an increasing number of women, even the wives of the poor, who will make every effort to meet

the increased cost of intelligent pre-natal and post-partum care in addition to qualified services at confinement. Many physicians feel that fees for Obstetrics are inadequate and that the service should be as well paid as is surgery. Before this is warranted, our obstetrical practice must be advanced to a point comparable to modern surgery in efficiency.

An increased fee should be the very least of all reasons for advocating better Obstetrics. However, it is the one too often cited by physicians as an excuse for mediocre service to pregnant patients. Better babies, more numerous babies, better mothers, increased longevity, and decreased morbidity and mortality during pregnancy, childbirth, the puerperium and after-life are the prime and compelling reasons for better Obstetrics.

As an evidence of the slow development of the art of Obstetrics, attention is invited to the method of podalic version advanced by Irving W. Potter. This is the only new thing in Obstetrics since the development of chloroform anesthesia in confinement.

It is in the matter of pre-natal care that Obstetrics differs most widely from midwifery. The average midwife cannot tell the pregnant patient any more than her own mother, married sister or friend has already told her about caring for herself during gestation. The day has not yet gone by when the physician's advice regarding pre-natal care consists in obtaining the name and address of his patient, ascertaining whether she has previously borne a child or not, and telling her to go home and take care of herself until labor pains begin. Too often the physician even forgets all about the woman until the confinement call comes.

Let us now examine the excuses of our childless women in the light of pre-natal care and consider some of the essential features of pre-natal care.

Fear that child-bearing will spoil the figure. This reason is frequently given by younger married women, especially those who come from more refined homes and who are active in out-door sports and social activities. They point with pity to their own mothers, sisters or friends whose figure-profiles are hopelessly changed by child-bearing. Their reasons are facts in many cases. Unless we can bring forward adequate means to protect the abdomen and breasts during pregnancy and lactation, so that they may retain their elasticity and contour afterwards, we shall fail in our duty.

Belief is quite general among physicians and midwives, as well as the public, that the pregnant woman should not wear a corset. In consequence many of them go to term without any abdominal support. They usually experience extreme abdominal distention, multiple striæ formation, backache, groin pains, diastasis of recti muscles, bladder embarrassment and constipation, and become practically bedridden near term.

The pregnant woman should not long continue to wear her ordinary dress corset after pregnancy is established. However, she should wear a suitable maternity corset, or maternity abdominal supporter, fitted by a competent corsetierre under the eye of her physician, not later than the fifth month, and thereafter adjusted as frequently as needed in the same careful manner, until the day of confinement. The unbounded relief afforded the gravida by a proper abdominal supporter during the latter half of pregnancy, especially if she be a multipara, is sufficient argument by itself for the supporter. Because of this relief from extreme distention of the lower abdomen, with its attendant symptoms of lumbar backache, groin pains, frequent urination and striæ formation, our gravida is enabled to be up on her feet, exercising actively, until actual settling begins.

No maternity corset or abdominal supporter, however well adjusted, will prevent striæ formation by itself; nor will spasmodic, irregular massage of the abdomen with one hand, using oils or fats, be sufficient to prevent striæ formation. Faithful, persistent, daily massage with both hands, as presently described, begun not later than the fourth month, will usually entirely prevent striæ gravidarum. The literature on Obstetrics does not lay sufficient emphasis upon means for the prevention of striæ.

It is my desire to bring the following particular method of massage to the attention of the profession. The gravida, preferably a primipara, because in her the best results can be obtained, is instructed to commence vigorous massage of the entire abdomen and hips for at least ten minutes, night and morning, beginning on the day of her first visit to the office which should be during the second, third or fourth month of pregnancy. The results will not be so satisfactory if massage is commenced later than the fourth month.

Seated in the Fowler's position, with the abdomen and hips exposed, or in the dorsal position with the head and shoulders elevated on two pillows, the patient is shown how to stretch the skin between the curved finger-tips of both hands. She is instructed to begin in the left groin and massage a strip of skin about three inches wide, extending upward toward the left costal border. Thereafter similar strips are taken up until the entire area of the abdomen is covered systematically. The hips are each massaged in like manner. The patient is told to press in deeply with the finger-tips and pull the skin vigorously until it smarts. Only then can we be sure she really stretches the elastic connective tissue fibres of the corium. If the skin is dry or becomes irritated after repeated sittings, the patient may touch her finger-tips in olive oil, palm oil or cocoa butter when beginning massage. Too much oil should not be used, however, as the finger-tips will slip too easily over the skin and no real stretching of the deep fibrous layer of the skin will be accomplished. In order to preserve the velvety texture of the abdominal skin, the patient may use at her option, after massage, a cold cream, olive oil, a rose water lotion, a lemon juice and glycerine lotion, or plain castile soap and warm water upon the abdomen.

Whenever this method was begun before the fourth month and faithfully carried out, striæ formation has been prevented. Moreover, the

abdominal skin at full term, instead of being tightly drawn like a drum-head and broken in many places by recent striæ, is soft, velvety and elastic. One primipara who began massage in the fifth month and who gained forty pounds during her pregnancy, had a few small striæ upon her hips. These were regarded as being in large part due to her rapid gain in weight. Maternity supporters should be worn at all times except when in bed. One patient, a very heavy woman, pregnant for the third time, wore her supporter even when in bed, stating that she could sleep comfortably on her side only if she kept her supporter on.

To preserve the natural contour of the breasts is even more difficult than the prevention of striæ formation upon the abdomen. The modern brasierre, which constricts and binds down the breasts to meet the demands of fashion, has very often ruined the natural contour of the virgin breasts long before the primipara presents herself to the physician for examination. Such a breast, after a few years pressure of the bandeau, is pendulous already, and the nipple is flat or actually depressed. These patients should be instructed to lay aside the dress brasierre, begin active massage of the breasts with the fingers or electric vibrator, or both, and actively draw out and develop the nipples so that they will be serviceable. A proper maternity brasierre should be worn during pregnancy and until lactation is ended. The main features of this brasierre are that it opens in front, that it has an elastic band below the breast and a box plait running vertically from the elastic band to the shoulder strap over the nipple region to give fullness and prevent compression of the nipples.

The writer instructs each primipara and most of the multipara to devote five minutes night and morning to kneading and finger massage of the breast glands to increase their circulation. The massage of the breast is completed by making traction upon the nipples and rolling them between the fingers. During the last thirty days of the pregnancy, each gravida is instructed to apply a few drops of 20 per cent glycerol of tannin to each nipple and massage until dry, once daily, covering the breast with a piece of linen or muslin to protect the underwear or nightdress from staining by the tannin. Where this has been faithfully done as directed, the result is a gratifying freedom from fissures and raw nipples.

Maternity patients deeply appreciate adequate care of their breasts, especially those who have suffered from nipple and breast gland infections in previous pregnancies. The women of this generation do not nurse their babies as long as did their mothers and grandmothers. Let us revive and encourage breast feeding by removing its dangers and by supporting the nursing breasts by proper maternity brasierres all during pregnancy and lactation, so that their contour will not be destroyed.

"Bearing children may ruin my health." How often we encounter a young married woman who dreads pregnancy for this reason! Her mother or sister, her aunt or her school chum have never had good health since childbirth. This is the most formidable reason of all which women have for dreading pregnancy. To the woman who offers this excuse for being childless, I say, "Come in and let me give you a thorough physical examination." The first cardinal principle of pre-natal care is a complete physical examination of every woman before she conceives, or very early in her gestation. At such examination focal infections in the mouth, nose, throat, ears, cervix or elsewhere; nephritis, heart disease, tuberculosis, syphilis, anemia, malformations of the pelvis and many other ailments can usually be discovered. Often the woman in question will then permit the examiner to handle her case so as to avoid many of the various disasters which befall the gravida who was not thoroughly examined. It is my practice to have teeth extracted, if abscessed, carious teeth cleaned and filled, infected tonsils removed, septic nasal sinuses drained, infected appendices and pus tubes removed, septic cervices treated, the infected kidney pelvis drained and washed, syphilis and anemia actively treated, at any stage of pregnancy, before the settling of the baby just prior to its birth. The popular notion, too long entertained by physicians, that no operations or radical treatment may be done to the pregnant woman belongs in oblivion with other heresies of ignorance. The vast bulk of the ills of pregnancy, childbirth and the puerperium will be prevented when the physician shall insist upon the eradication of all focal infections early in pregnancy, and the active relief of all the diseases of the gravida which are amendable of treatment.

A woman's general health should be better during and after a normal pregnancy, properly supervised by her physician, but how few pregnancies are really normal without such supervision. I make a strong plea for complete physical examination of every pregnant woman early in pregnancy. This will often prevent the status post-partum of the woman who cries out "I have never been well since my baby came." Physical examination will also remove the basis for the fear of the nullipara that "bearing children may ruin my health."

"Babies will keep me tied down at home." Normally, pregnancy should not interfere with the ordinary going and coming of the gravida until the last three or four weeks before delivery. To this end, properly adjusted maternity supporters greatly assist in keeping pregnant patients on their feet and active almost until the delivery.

The healthy baby will not keep its mother "tied down in her home," as she expresses it, for much over one month after birth, provided she has had adequate pre-natal care. For both mother and baby we must preach a gospel of out-of-doors. It also is part of the instructions to expectant mothers to spend at least two hours out-of-doors daily. The mother who is really "tied down" at home, is so "tied" not because of her baby, as a rule, but because she is in poor physical condition for want of efficient pre-natal, confinement and post-partum care.

"Pregnancy will interfere with my work—my

position." After the fifth month most gravida should abandon employment outside their own homes. Occasionally one who is teaching school, or one who has some slight clerical employment, can retain her position longer than the fifth month. It is true that women must choose between child-bearing and business life, and that they cannot ordinarily engage in both successfully. It is also a fact that a mother should rear her own child and not delegate the task to other women. Therefore it seems to the writer that this excuse is not one which requires much consideration. Here, also, it may be said that adequate pre-natal care will smooth the way for many of the older nulliparæ who have spent their time in business occupations to contemplate child-bearing, without jeopardizing their health. Physicians are often interviewed by timid women between the ages of 30 and 40 who desire to know if it is safe for them to undertake a pregnancy at their age. If physical examination discloses a healthy woman, the answer always is in the affirmative, provided the patient will permit herself to be under constant observation during her pregnancy. Nulliparæ in the third decade of life require special pre-natal care for a successful pregancy.

"Pregnancy will interrupte my social life and club work." Usually this is the shallow excuse of the lazy and selfish woman. However, there are many women who, fearing pregnancy and childbirth, throw themselves into social activities because they wish to forget that they cannot, or fear that they cannot undertake the larger duty which nature intended them to discharge.

"I might not receive proper care when the baby comes." One of the major arguments for pre-natal care is that the gravida learns to know and trust her physician months before her delivery. She then has no fear about the care she will receive in confinement. It is the woman who has had no pre-natal care and who, perhaps, has not even seen the physician, who fears the day of confinement. Physicians who render adequate pre-natal care are trusted by their patients at the time of confinement. Many visits to the office, or to the home, have strengthened the confidence which the patient has in her physician. He has come to be something more than just "the doctor," and has taken on the related functions of advisor and friend, as well as that of a physician. Therefore, anæsthetics may be administered, manual delivery may be done, even Cesarean section may be performed at the will of the physician, because the patient feels safe in his hands.

In addition, there is an immense advantage to the physician himself in being thoroughly familiar with the condition of the patient whom he is about to confine. Many of the preventable disasters of childbirth constantly occur because the physician has not examined, or has not been permitted to examine his patient frequently before her delivery. Very few obstetricians feel satisfied with a single measurement of an abnormal pelvis. This is merely one illustration of the desirability of frequent examinations before delivery.

"We cannot afford to have children." This is a most common excuse, but one not usually true in the cases of those women who voice it. Those who truly cannot afford children are the ones who have the large families. The high cost of living does not stop child-bearing, as everyone knows.

When sincerely expressed by the patient, this excuse usually has for its background some calamity in pregnancy or childbirth which has befallen the patient's relative or friend, or which may have befallen the patient herself in a previous pregnancy. The laity and physicians alike are well aware that abnormal pregnancies and abnormal deliveries cost many times more in dollars and cents than do the normal cases, quite aside from their other distressing aspects. The writer contends that careful pre-natal care will rob even this excuse of its last basis, since it will make pregnancy and childbirth more economical from a financial standpoint.

Before conclusions are enumerated, the writer desires to acknowledge with thanks the skillful assistance of Dr. W. W. Cross of our Fresno Clinical Group, in the preparation of this paper.

CONCLUSIONS

First—Adequate pre-natal care will do more than anything else to overcome the reluctance of American women to bear children. There is still no reluctance upon the part of our foreign-born population and our domestic population of foreign parentage.

Second—Pre-natal care must provide means of preserving the figure-profile of abdomen and breasts, and prevent striæ formation, diastasis of muscles, lumbar backaches, groin pains, and bladder and bowel embarrassment during pregnancy. Means are described in this paper which are found very successful by the author. The preferred types of maternity supporter and maternity brasierre are discussed.

Third—There is immense value in early, thorough physical examination of pregnant women. Most of the disasters of pregnancy and childbirth could be prevented, or at least foreseen at such examinations. This examination inspires the confidence of the patient.

Fourth—Pre-natal care will keep the gravida on her feet during almost the whole period of her pregnancy. Her out-door life, as well as her active home life, will both be preserved, and her social life interfered with but little.

Fifth—Pre-natal care inspires trust in the heart of the patient and smooths the way for confinement and any attendant procedure the physician finds necessary.

Sixth—Pre-natal care will even overcome the excuses of women who sincerely contend that they cannot afford, financially, to have children.

Seventh, and lastly, pre-natal care will pay the physician a good return in consolation and in fees for his time and effort. Patients will pay well for good service.

Buy your health in advance, says the U. S. Public Health Service, and you wont even know you are paying for it. Good solid dependable health was never cheaper than it is today.

THE GREAT SECOND TYPE OF CHRONIC ARTHRITIS—FURTHER STUDIES

By LEONARD W. ELY, M. D., San Francisco

General. By the term second type of arthritis I mean that great type of chronic arthritis called arthritis deformans by the Germans, osteoarthritis by the English, degenerative arthritis by Nichols and Richardson, hypertrophic arthritis by Goldthwait, and other names by various other writers. My reasons for my nomenclature have been set forth on numerous occasions in previous papers, as well as the objections to the titles hitherto given to the disease.[1] The term destructive arthritis is being employed recently with increasing frequency, especially by radiographers, but as this term can be employed with equal justice to every known form of arthritis, it can be said to be worse than most of the others.

One year ago I reported ninety cases of the disease, setting forth its essential features.[2] I shall recapitulate briefly here.

The prime cause is infection in the alveolar processes of the jaws. Trauma only acts by straining a joint already damaged by the disease.

The disease is essentially one of middle life and of advanced age, but only because alveolar infection is more frequent then. It occurs fairly often in the third decade. Diet is only of importance from the fact that indigestion changes the secretions of the mouth, and makes the infection about the roots of the teeth more active. All attempts to understand the disease on the basis of "disturbed metabolism" or to treat it on that basis are futile. The changes have been rung *ad nauseam* on the dietary treatment of chronic arthritis, or chronic rheumatism as it was formerly caused. The pendulum swings back and forth. The present vogue of the "carbo-hydrate free" diet is simply a recrudescence of the raw beef and hot water treatment, the Salisbury treatment, of forty years ago. Certain of the sufferers from this disease will improve under a starchless diet, and others under a meatless diet, simply because one diet agrees with some, and another with others. These dietary fashions are attractive, doubly so when camouflaged by high-sounding titles, and doubtless will continue to run their course. They do, however, confuse the subject and impede progress, and for this reason they should be combated. Health is metabolic equilibrum, disease is metabolic imbalance, or disturbed metabolism. To say, therefore, that a certain form of chronic arthritis is caused by disturbed metabolism, is to say that it is caused by disease, and is quite absurd.

Pathology. The essential primary pathological feature of the second type of arthritis is an aseptic necrosis in the bone marrow near the joint. Probably the same process occurs throughout the bone, causing cysts and fibrosis, but it usually is symptomless unless a joint is in the neighborhood.

All our efforts to obtain cultures from the marrow have been in vain. We assume that infection has been present at some time and has died out, but we know nothing as to this. The joint fluid also was always sterile in our cases, and we have come to consider the arthritis really as a traumatic arthritis, caused by the strain of function on a previously damaged and distorted machine.

Following the necrosis in the end of a long bone,* nature builds a wall of new bone between the diseased area and the joint, and the cartilage over it degenerates and wears away, leaving an articular surface of dense, eburnated bone, which becomes grooved in the line of joint motion. New bone is built up at the circumference of the joint at the lines of attachment of the ligament, giving rise to the lipping and spurring so prominent in the radiograph and in the pathological specimen. This is the prominent gross feature of the disease, and is responsible for most of the previous ideas on it as well as for most of the names which have been applied to it. A careful study of the negative, however, usually shows distinct rarefaction in the bone near the joint, and occasionally sequestra. When the bones are sawn up in the laboratory this rarefaction is quite evident, even when the thickened bone about it disguised its presence during life.[3]

An observation I have made during the past year I consider very important, namely, *the relation of this disease to fracture of the neck of the femur in the elderly.* The presence of the second type of arthritis has often been noted after fracture of the femur neck, and the fracture was assumed to cause the arthritis. It cannot cause it. Cartilage and bone deprived of their nutrition and buried in the soft tissues do not behave as does the head of the femur after fracture of the neck. I speak not from abstract theory, but from knowledge gained by experimental work.[4-5]. Marked rarefaction of the neck and head of the femur may often be seen in plates taken immediately after fracture of the femur neck too early to be caused by the fracture.

Fracture of the neck of the femur does not cause a chronic arthritis, nor does a chronic arthritis cause the fracture; but both are caused by the same thing, namely, by a necrosis in the head and neck of the bone.

In my article of a year ago I called attention to the influence of this disease in causing the stiff and painful joint after a joint fracture and shall not dilate upon that further here.

The ankylosis which follows this form of arthritis is that of two bones which no longer fit, the obstruction to motion is that of a damaged machine. Union of the bones, whether by fibrous tissue or bone, practically never occurs except in the spine.

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* The same process occurs also in short and flat bones.

Case No.	Age	Sex	Occupation	Joint	Infection
91	47	Female	Housewife	Multiple	Pyorrhea. No X-ray taken
92	55	Male	Driver for wholesale house	Spine	Alveolar infection
93	32	Male	Laborer	Feet	Alveolar infection
94	43	Male	Ranch helper	Spine	Alveolar infection
95	72	Female	Housewife	Hip	Adentulous
96	62	Female	Domestic	Multiple	Alveolar infection
97	52	Male	Laborer	Hip	Alveolar infection
98	54	Male	Laborer	Multiple	Alveolar infection
99	63	Female	Day worker	Spine	Alveolar infection
100	67	Female	Housework	Spine	Alveolar infection
101	63	Male	Laborer	Spine	Alveolar infection
102	47	Male	Clerk	Knee	All teeth gone
103	45	Female	Housewife	Spine	Alveolar infection
104	42	Female	Nurse	Spine	Few remaining teeth sound
105	60	Female	Housewife	Hip and sacroiliac	Alveolar infection
106	55	Male	Garageman	Acromioclavicular	Alveolar infection
107	50	Male	Rigger	Knee	Alveolar infection
108	31	Female	Housewife	Knees	Alveolar infection
109	60	Female	Saleswoman	Foot	Alveolar infection
110	51	Male	Laborer	Knee	Alveolar infection
111	54	Male	Laborer	Knees	Alveolar infection
112	48	Male	Teamster	Spine	Alveolar infection
113	51	Male	Teamster	Spine	Alveolar infection
114	38	Female	Housewife	Hip	Alveolar infection
115	47	Male	Laborer	Spine	Gingivitis. No X-ray of teeth
116	63	Male	Clerk	Spine	Alveolar infection
117	62	Female	Domestic	Fingers	Alveolar infection
118	55	Male	Laborer	Knee	Alveolar infection
119	44	Male	Clerk	Tarsus	Alveolar infection
120	72	Male	Farm hand	Spine	Alveolar infection
121	51	Female	Housework	Hips	Alveolar infection
122	62	Male	Laborer	Hip	Alveolar infection
123	46	Male	Laborer	Spine	Alveolar infection
124	50	Female	Housework	Knees	Alveolar infection
125	47	Male	Mariner	Spine	Alveolar infection
126	52	Male	Laborer	Hip	All teeth out; fell out
127	63	Female	Day worker	Spine	Alveolar infection
128	55	Female	Housewife	Hip	Alveolar infection
129	59	Female	Housewife	Spine	Alveolar infection
130	48	Male	Waiter	Knee	Alveolar infection
131	67	Male	Shipjoiner	Hip	Alveolar infection
132	58	Female	Practical nurse	Multiple	Alveolar infection
133	37	Male	Laborer	Spine	Alveolar infection
134	72	Male	Laborer	Foot	Alveolar infection
135	50	Male	Laborer	Spine	Alveolar infection
136	22	Male	Confectioner	Knee	No alveolar infection
137	39	Male	Laborer	Hip	Alveolar infection
138	64	Male	Rancher	Hip	All teeth extracted
139	26	Male	Laborer	Knee	Alveolar infection
140	59	Male	Laborer	Spine	All teeth gone
141	49	Male	Carpenter	Spine	Alveolar infection
142	48	Male	Laborer	Tarsus	Alveolar infection
143	22	Male	Sailor	Knee	Alveolar infection
144	69	Female	Housework	Spine	Alveolar infection
145	56	Male	Laborer	Spine	Alveolar infection
146	89	Male	Watchman	Spine	Alveolar infection
147	52	Male	Granite cutter	Wrist	Alveolar infection
148	57	Female	Housewife	Knees	Alveolar infection
149	61	Male	Tinsmith	Spine	Alveolar infection
150	75	Male	Watchman	Spine and shoulder	Alveolar infection
151	67	Male	Laborer	Spine	Alveolar infection
152	64	Male	Laborer	Knee	Alveolar infection

Symptomatology. The symptoms are those of a low grade of chronic arthritis. Rarely is the pain severe except in the hip or spine. When the disease occurs in the spine it is usually called muscular rheumatism, fibrositis, lumbago, sciatica, or neuritis. Recently it has been dignified with the term radiculitis.

The diagnosis is made by the Roentgen rays. If lipping and spurring be present at the lines of attachment of the capsule, the disease belongs in this category.

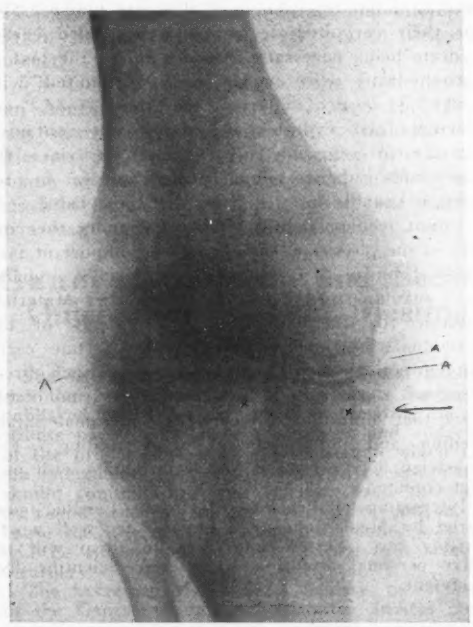
Treatment. The main indication is the removal of the focus of infection in the alveolar processes of the jaws, if it still exists. The changes in the joint caused by the disease, once present, never disappear, nor can they be removed. This is the reason why symptoms can persist long after all teeth are gone. Rough bone ends rubbing against each other, and masses and spikes of bone heaped up about the joint will always cause pain.

If the focus be removed in the early stages of the disease, the process may die down, and the patient may enjoy comfort thereafter. Even in more advanced cases the removal of the focus is often followed by comparative comfort.

Immobilization probably is of little use, but heat usually is grateful. Note the tendency of elderly people with "chronic rheumatism" to hug the fire. By all means regulate the diet according to the patient's individual needs. Most of these patients learn what they may eat and what they may not. Passive hyperaemia by the Bier bandage sometimes quiets pain. Gentle massage may be tried, but forced passive motion is to be strictly avoided. It simply grinds together two rough, distorted bone ends and increases the disability. All injections into the joint I believe to be perfectly useless. Aspirin quiets the pain.

Some of our cases which have not improved after extraction of the affected teeth have done well under the deep injection of a foreign proteid. The identity of the proteid seems immaterial. My associate, Dr. Fisher, who at present has charge of this branch of the treatment, is employing antigonococcic vaccine, with an initial dose of 250,000,000.

Arthritis of Knee. — Skiagram showing characteristic lipping of tibia and femur (A.A.), and areas of rarefaction in head of tibia, (X.X.).



Arthritis of Knee. — Skiagram showing characteristic lipping of tibia and femur (A.A.), and areas of rarefaction in head of tibia, (X.X.).

In severe cases, especially when the hip is affected, resection offers the best way out. The head of the bone is removed, the trochanter is thrust into the acetabulum, and the hip is put up in plaster of Paris in the abducted position. The operation is difficult through the ordinary anterior incision, but easier through Sprengel's incision.

A list follows of the cases seen during the past year in the orthopaedic department of the Stanford clinics, with the sex, age and occupation of each one. My private patients present much the same results, except, of course, that the occupations are not quite so laborious as a rule.

An analysis of these cases shows conditions strikingly similar to those prevailing in the cases I published a year ago. The occupations are those of the general run of clinic patients. Some of them are laborious and some of them are not. The disease is common in well-to-do patients, but in the absence of strain often passes unnoticed unless severe.

Sex. Forty-two of the patients were of the male sex, twenty of the female. This may be due to two things: women may take better care of their teeth than men, or the nature of their occupations spares their joints from strain. In the latter case the presence of the disease in them passes unnoticed, or the symptoms are so slight as not to drive them to the clinic.

Age. This varies from twenty-two to eighty-nine, reckoned from the time of registry at the clinic. The age of onset of the disease, therefore, would run somewhat lower than the figures show. Three of the patients were in the third decade of life, five in the fourth, thirteen in the fifth, twenty in the sixth, sixteen in the seventh, four in the eighth and one in the ninth.

Alveolar Infection. Almost invariably this was determined by our dentist, Dr. Campbell, with the Roentgen rays. The proportion of patients with demonstrable alveolar infection was overwhelming. All but nine had it. Of these nine the *few remaining teeth* of one were sound. Two had pyorrhea, but were not radiographed. Five had lost all their teeth. In one case the teeth had "fallen out." Concerning these five it is well to remember that the pain and disability from the anatomical changes often persist long after the removal of the cause. Only one patient, a man of twenty-two, a confectioner, had sound teeth. The X-ray picture of his knee showed a marked rarefaction of the bones.

CONCLUSIONS

From these cases, and from those I published one year ago, the following conclusions are drawn:

1. The great second type of chronic arthritis is the result of a necrosis in the bone marrow in the region of the joint, and its distinguishing mark clinically is the production of new bone at the margin of the articulation, at the lines of insertion of the capsule.

2. No proof is at hand of the presence of infection in the bone marrow or in the joint fluid. Presumably the necrosis is due to a low-grade infection. In this case the organism itself must die out, or else is of such a nature as to escape detection with our present methods of examination.

3. This form of arthritis is more frequent in men than in women, in the proportion of two to one, at least as observed clinically. It is essentially a disease of middle and late life, though it may occur as early as twenty-two years.

4. The prime cause of the disease in an overwhelming proportion of cases is infection in the alveolar processes of the jaws. The removal of this infection is the first step in the treatment.

5. The anatomical changes are permanent. The removal of the focus of infection has no influence upon them, once they have formed.

6. The results of treatment generally are good. Removal of the focus in the alveolar processes comes first. As adjuvants, hydrotherapy, dry heat, deep injections of a foreign proteid, and, in the extremities, the application of the Bier elastic bandage may be tried.

7. In the severe form of the disease as found in the hip, resection is indicated.

8. The same aseptic necrosis in the head and neck of the femur which causes this type of arthritis in the hip is the cause of many cases, at least, of fracture of the neck of the femur in the elderly.

Notice

If you are interested in presenting a paper at the next annual meeting in Yosemite, May 15 to 18, be sure and write *promptly* to the secretary of the appropriate section. The names and addresses of all section officers will be found on Page 419 of this number of the Journal.

Within the past few years the whole question of illegitimate births has received a great deal of attention, though generally at the hands of private organizations rather than as a State problem. Very little advance has been made in legislation pertaining to the status and support of the illegitimate child. With increased recognition of the meaning of the problem, and with the impetus that the war has given to all efforts toward conserving child life, many beneficial changes in this respect will doubtless come in the United States as in European countries. In the Federal law providing for allotments and granting allowances to the dependents of soldiers, governmental recognition was given to the equal needs of all children for proper support. Here illegitimate children were placed on the same basis with legitimate children as being entitled to support by the father and by the government. Whether or not conditions that have come since the United States entered the war, will affect the illegitimate birth rate, it is too early to determine. Regardless of whether the numbers are increased or decreased, it cannot be doubted that these children, who from the anthropological point of view are in no way inferior, but who by the conditions of their birth are in special need of protection, will, as a result of the war, become in a larger measure the special concern of the State.—(E. O. Lundberg, Am. J. Phys. Anthropology, July-Sept., 1918.

SLEEP REQUIREMENTS OF CHILDREN

No child nutrition worker, says the U. S. Public Health Service, can hope to get satisfactory results without insisting on enough sleep for her charges. Besides damaging the nervous system, late hours cause "sleep hunger" and make children nervous and fidgety. The Service commends the following precepts just issued by the London County Council: School children aged four years need twelve hours' sleep a day; aged five to seven, eleven to twelve hours; eight to eleven, ten to eleven hours; and twelve to fourteen, nine to ten hours. Children grow mainly while sleeping or resting; do you want yours to grow up stunted? Tired children learn badly and often drift to the bottom of the class; do you want yours to grow up stupid? When children go to bed late their sleep is often disturbed by dreams and they do not get complete rest; do you want yours to sleep badly and become nervous? Sufficient sleep draws a child onward and upward in school and in home life; insufficient sleep drags it backward and downward. Which way do you want your child to go? Tiresome children are often only tired children; test the truth of this. That a neighbor's child is sent to bed late is not a good reason for sending your child to bed late; two wrongs do not make a right. Going to bed late is a bad habit which may be difficult to cure; persevere till you succeed in curing it.

THE MODERN METHOD OF FEEDING INFANTS

Modern infant feeding calls for a formula suited to the individual requirements of the individual baby. The physician now realizes that an infant, deprived of breast milk, must be fed as an individual. The nourishment from the infant's food is principally derived from cow's milk. The "foods" contain no mysterious life-giving elements, but are used as modifiers. As such, they are indispensable for their carbohydrate content, the added carbohydrate being necessary to make up for the loss of carbohydrate when cow's milk is diluted with water. It is also important that these "foods" are given as carbohydrates and should not contain a mixture of vegetable protein and fat, since the cow's milk supplies animal protein and fat in proportion suitable for the growth of most babies.

Infant feeding should be directly under the control of the physician. Realizing this important fact, Mead Johnson & Company of Evansville, Indiana, have manufactured a line of Infant Diet Materials suitable for the individual requirements of the individual baby. These products do not carry laity directions on the trade packages. Such directions on a package of food is the unsurmountable wall that differentiates between individual infant feeding and indiscriminate infant feeding. The physician may prescribe Mead's products with perfect confidence.

Interesting publications on Infant Feeding, prepared by Mead Johnson Company are well worth writing for. Letters addressed to them will receive personal attention from their Scientific Department.

THINGS EVERY PHYSICIAN SHOULD READ

This column, which will appear from time to time in the *Journal*, is offered under the impression that much of the large and varied literature that passes over an editor's desk is not readily available to most physicians, nor have physicians time to look through the libraries for the occasional article that is really worth reading or that is an important contribution to problems confront-

ing better medicine today. The editor would be glad to have suggestions for this column from any source. Only subjects of importance to physicians will be noted:

State Medicine: An editorial in the September number of the Journal of Radiology, pages 50 to 54. A vital and interesting discussion of certain phases of this important subject.

Concerning Surgical Fees: The action of the Johns Hopkins Hospital Board of Trustees in fixing a maximum fee of $1000 for any operation is subject to extensive discussion, most of which is in the form of adverse criticism, both in lay and medical literature. An editorial in the Journal of the Indiana State Medical Association, August 15, 1921, page 271, and in the Illinois Medical Journal, September, 1921, pages 235 and 236, deal with this and other questions of medical economics.

Malpractice Insurance and Its Costs: An interesting article on this subject by Robert J. Folonia, Illinois Medical Journal, August, 1921, page 92.

The Fad for Pseudoscience: By George D. Tarnowsky. Jr. A. M. A., September 10, 1921, page 859. Dr. Tarnowsky has written a timely article upon a subject of great importance to every physician of the country.

The Truth About Vivisection: By Ernest Harold Baynes. Woman's Home Companion, July, 1921, page 9. An important and interesting article dealing with this very much discussed subject.

The Greatest Two Aids to Long Life: American Magazine, October, 1921, page 15. It is very stimulating and quite worth while to read this story of the life of Dr. Stephen Smith, who is now approaching his ninety-ninth birthday and has held about all the honors that can be given to a man in the medical profession.

General Session and Section Officers for the 1922 Meeting of the State Society

The list of the officers of the general sessions and the various sections of the State Society is published below, so that members desiring to contribute papers may have the names and addresses of the proper officers of the section in which they are interested. Members desiring to present papers should communicate without delay with the chairman and secretary of the appropriate section, because the program is getting well under way and will be closed and go to press the first week in February.

The Secretary of the State Society, as chairman of the General Program Committee, invites correspondence and suggestions regarding any phase of the 1922 program.

GENERAL SESSIONS

Chairman, Dr. John H. Graves, President of the Society, 977 Valencia Street, San Francisco.
Secretary, Dr. W. E. Musgrave, Chairman of the Program Committee, 912 Butler Building, San Francisco.

SECTION ON TECHNICAL SPECIALTIES

Chairman, Dr. Ray Lyman Wilbur, President Stanford University.
Secretary, Dr. Charles T. Sturgeon, Merritt Building, Los Angeles.

SECTION ON MEDICAL ECONOMICS, EDUCATION AND PUBLIC HEALTH
(League for the Conservation of Public Health)

Chairman, Dr. Dudley Smith (President League for the Conservation of Public Health), Thomson Building, Oakland.
Secretary, Dr. W. T. McArthur (Secretary League for the Conservation of Public Health), Security Building, Los Angeles.

SECTION ON INDUSTRIAL MEDICINE AND SURGERY

Chairman, Dr. E. W. Cleary, 177 Post Street, San Francisco.
Secretary, Dr. Packard Thurber, 906 Black Building, Los Angeles.

SECTION ON RADIOLOGY
(Roentgenology and Radium Therapy)

Chairman, Dr. Albert Soiland, 527 West Seventh Street, Los Angeles.
Secretary, Dr. H. E. Ruggles, Butler Building, San Francisco.

SECTION ON PATHOLOGY AND BACTERIOLOGY

Chairman, Dr. William Ophuls, Stanford University Medical School, San Francisco.
Secretary, Dr. Roy W. Hammack, Brockman Building, Los Angeles.

SECTION ON GENERAL MEDICINE

Chairman, Dr. Joseph M. King, Brockman Building, Los Angeles.
Secretary, Dr. E. S. Kilgore, 391 Sutter Street, San Francisco.

SECTION ON PEDIATRICS

Chairman, Dr. William Palmer Lucas, University Hospital, San Francisco.
Secretary, Dr. Hugh K. Berkley, Brockman Building, Los Angeles.

SECTION ON NEUROPSYCHIATRY

Chairman, Dr. Walter F. Schaller, 909 Hyde Street, San Francisco.
Secretary, Dr. Carl W. Rand, 918 Harvard Building, Los Angeles.

SECTION ON GENERAL SURGERY

Chairman, Dr. Charles D. Lockwood, 295 Markham Place, Pasadena.
Secretary, Dr. Edmund Butler, Butler Building, San Francisco.

SECTION ON EYE, EAR, NOSE AND THROAT

Chairman, Dr. Frank A. Burton, Watts Building, San Diego.
Secretary, Dr. Harvey McNaught, Butler Building, San Francisco.

SECTION ON UROLOGY

Chairman, Dr. George W. Hartman, 999 Sutter Street, San Francisco.
Secretary, Dr. Louis Clive Jacobs, 462 Flood Building, San Francisco.

SECTION ON ORTHOPEDIC SURGERY

Chairman, Dr. W. W. Richardson, Brockman Building, Los Angeles.
Secretary, Dr. G. J. McChesney, Flood Building, San Francisco.

SECTION ON ANESTHESIOLOGY

Chairman, Dr. Mary E. Botsford, 807 Francisco Street, San Francisco.
Secretary, Dr. Eleanor Seymour, 308 Consolidated Realty Building, Los Angeles.

SECTION ON GYNECOLOGY AND OBSTETRICS

Chairman, Dr. Harry M. Voorhees, Brockman Building, Los Angeles.
Secretary, Dr. L. A. Emge, Stanford University Hospital, San Francisco.

QUALIFICATIONS FOR MEMBERSHIP

As an answer to numerous requests regarding qualifications for membership in various societies of the State, the Council of the Medical Society of the State of California has passed the following resolution, which it is believed will cover all possible angles to the problem:

(a) Physicians holding the degree of Doctor of Medicine from a reputable school and who are licensed to practice in the State of California are, of course, eligible to membership in the county and State societies.

(b) Persons holding the degree of Doctor of Medicine from an acceptable school, who are licensed to practice medicine and surgery and who are also licensed to practice drugless therapy, and who are practicing both of these methods, are entitled to membership in the local and State organizations.

(c) Persons who are not Doctors of Medicine, from acceptable schools, but are graduates from drugless therapy schools and who are licensed (by examination) to practice medicine and surgery, and who also may or may not be licensed to practice drugless therapy, are not entitled to membership in local and State organizations, because our membership is based primarily not upon legal license to practice, but upon the degree of Doctor of Medicine from an acceptable school.

(d) Doctors of Medicine who are licensed only to practice drugless therapy and do practice only drugless therapy are not entitled to membership, because they violate a definite and specific clause in the constitution and by-laws of all medical organizations, which prohibits practice exclusively of one branch of medicine. The reason for this provision is that the practice of medicine implies thorough education in all subjects of and pertaining to medicine, and after such education has been secured, the physician should and must have the right to treat diseases by the method that to him seems most likely to result in recovery of the sick person.

(e) Persons who are not Doctors of Medicine, but graduates of drugless schools and who have secured their licenses by examination to practice medicine and surgery, and practice only medicine and surgery, are not entitled to membership in the State or local societies.

County Societies

Fresno County Medical Society (as reported by Dr. A. D. Ellsworth, Secretary): The September meeting of the society was held at the home of President J. R. Walker at Sunny Side. There were twenty-five members present and eighty-seven absent. Dr. Alson R. Kilgore of San Francisco was a guest and addressed the society on Bone Tumors, his remarks being illustrated by lantern slides.

The Fresno County Hospital has been reorganized. Dr. H. O. Collins has been made superintendent and a staff of twenty-four physicians has been appointed to conduct the various departments of the professional work of the hospital. An effort is now being made to secure for the county a special hospital or ward for the observation and detention of patients suffering from mental disorders.

The Fresno clinical group, made up of a number of physicians engaged in the practice of group medicine, has ceased to exist as an organization.

San Diego County.—The U. S. Naval Hospital, which is under construction at San Diego and which will be completed during 1922, will consist of one main group of buildings built around a central court. These buildings will contain fourteen wards, including two for officers, an administration building, subsistence building, operating room pavilion, with four operating rooms, service building, nurses' quarters, red cross convalescent house and power plant. The operating room pavilion is standard design, with overhead light and north light. Anaesthetic, instrument and recovery rooms are of approved type.

The construction is of concrete and hollow tile, with solid monolithic concrete floor and roof construction, metal stairways and elevator shafting. The subsistence building will be provided with complete refrigerating plant with separate rooms for the preparation of various types of food. The buildings will all be connected by an arcade, which will afford protection from sun and rain.

The location of the hospital is considered to be the best in the vicinity of San Diego, and affords a broad, sweeping view of the ocean, the mountains, both to the eastward as well as those below the Mexican border, and overlooks the city and bay of San Diego.

The present plan provides for beds to handle about 650 patients. This can be increased to 750 or 800 in an emergency, and contemplated future construction will provide for at least 1000. Future construction contemplates additional wards, separate hospital corps' quarters, commanding officer's and executive officer's quarters and isolation ward.

The Bureau of Medicine and Surgery plans on the very latest type of equipment in all departments.

The hospital, designed to handle most of the Naval sick for the Eleventh Naval District, will cost, when completed, about $2,000,000.

The San Diego County Medical Society opened its regular meetings after the summer recess with a dinner at the San Diego Hotel, Tuesday, September 13, followed by a symposium on "Group Medicine—Its Advantages to Medicine and the Public."

The discussion was opened by Dr. Donald Frick of Los Angeles. Other out-of-town participants were Dr. H. A. Johnston of Anaheim and Dr. Charles D. Lockwood of Pasadena.

Santa Clara County. (As reported by Dr. J. L. Pritchard, Secretary.)

The society did not hold a meeting in August. The September meeting will be held at Gilroy. It will be a joint meeting of San Benito, Santa Cruz, Monterey and Santa Clara Counties.

A dinner will be served at 7 p. m., to be followed by a scientific program.

Sister Zoe, who has been Superior of the O'Connor Hospital in San Jose for the past four years, has been transferred to San Francisco, where she will be Superior at Mary's Help Hospital.

Sonoma County Medical Society (as reported by Dr. N. Juell, Secretary): The September meeting was held at Santa Rosa High School with fourteen members present and twenty-one absent.

By unanimous vote the Society repealed the clause in the by-laws relating to lodge physicians.

Dr. Hans Lisser of San Francisco was the speaker of the evening and gave an illustrated lecture on "Some Phases of the Endocrine Gland Problem."

Santa Rosa has a new faith healer who guarantees cure for practically any disease for $100.

News Item

Saint Francis Hospital Clinical Society: At the August meeting Dr. Martin H. Fischer presented a paper on Arteriosclerosis and Dr. John H. Graves gave an address on interesting problems before the American Medical Association delegates at the recent convention.

Merced Hospital Association: It is a pleasure to note that the medical men of Merced County, acting under the supervision of the League for the Conservation of Public Health, have been successful in incorporating and financing the Mercy Hospital. This is a community general hospital, the first unit to be of twenty-five beds, and the plans to provide for other units to be added as needed. The board of directors of the institution are all substantial business men of the community and the membership of the local medical society will constitute its staff.

The profession and the people of Merced County are to be congratulated upon this practical, tangible expression of their interest in the welfare of their fellow men.

Weimar Sanitarium.—The Supervisors of the eleven counties operating the tuberculosis sanitarium at Weimar, Placer county, will receive bids for the construction of a new service building for that institution on August 30. The building will be the last word in construction and appointments, and will greatly improve the facilities for handling the steady increase of patients. Mr. W. H. Weeks of San Francisco is the architect. The cost will be $35,000.

New Clubhouse for California Sanitorium.—Drs. Harry Warren and Max Rothschild of the California Sanitorium, Belmont, Cal., have shown their progressiveness by starting construction of a $25,000 club building for their institution. It will include a small theater, with stage and moving picture apparatus, library, men's department, solarium, laboratories, etc. It is the first unit of an extensive improvement plan for the sanitorium. Plans and specifications were prepared by W. H. Weeks, the San Francisco architect.

MEETINGS OF TECHNICAL SPECIALTY ORGANIZATIONS

At the meeting of the Board of Directors of the San Francisco County Medical Society, held September 13, it was moved, seconded and carried that the California associations of physiotherapists, medical social workers, radiographers, dietitians and clinical and laboratory technicians be allowed to meet in the society's rooms for purposes of organization until January 1, 1922.

PACIFIC ASSOCIATION OF RAILWAY SURGEONS

The nineteenth annual meeting of the Pacific Association of Railway Surgeons was held in the Medical Building, Bush and Hyde streets, San Francisco, on Friday and Saturday, August 26 and 27. The scientific meetings and luncheons were attended by about sixty members and a number of invited guests. The program was largely surgical and roentgenological.

The officers for 1920-1921 are: Dr. Fred W. Lux, president; Dr. Geo. R. Carson, first vice-president; Dr. Geo. W. Stout, second vice-president; Dr. E. M. Keys, treasurer, and Dr. W. T. Cummins, secretary. For 1922, Dr. S. S. Bogle was elected president and the other officers were re-elected for another year.

Program

1. The Importance of the Human Hand in Industrial Work.
   Dr. W. B. Coffey, San Francisco
   Discussion: Dr. W. I. Baldwin.
2. Syphilis Simulating Banti's Disease. Case Report and Demonstration of Patient.
   Dr. O. E. Eklund, San Francisco
3. A Neglected Region: A Plea for a More Thorough Routine Examination of the Ano-Rectal Tissues.
   Dr. J. H. Shaw, Santa Rosa
   Discussion: Dr. G. L. Eaton, San Francisco.
4. The Principles of Treatment of Spine Injuries Without Cord Involvement.
   Dr. W. I. Baldwin, San Francisco
5. Demonstration of Interesting Roentgen Plates.
   Dr. L. B. Crow, San Francisco
6. Symposium—Diseases and Their Relationship to the Stomach, Gall Bladder and Appendix.
   Medical: Dr. J. Wilson Shiels, San Francisco
   Discussions: Dr. Henry Abrahm, San Francisco
   Dr. F. W. Lux, San Francisco
   Surgical: Dr. W. I. Terry, San Francisco
   Discussions: Dr. S. S. Bogle, Santa Rosa
   Dr. A. W. Morton, San Francisco
   Pathological: Dr. D. M. Ervin, San Francisco
   Roentgenological: Dr. M. P. Burnham, San Francisco
7. Demonstration of Rehfuss' and Einhorn's Duodenal Tubes.
   Dr. H. F. Unsinger, San Francisco
8. Demonstration of Interesting Roentgen Plates.
   Dr. M. P. Burnham, San Francisco
   Discussion: Dr. S. S. Bogle, Santa Rosa
9. Election of Officers.

The Saint Francis Hospital Clinical Society cordially invites us to attend their monthly meeting at the hospital on Friday, August 26, at 8:30 p. m. Dr. Martin H. Fischer, University of Cincinnati, will present a paper on "Arteriosclerosis," and Dr. John H. Graves, president of the California State Medical Society, will address the meeting on "The Interesting Problems Before the American Medical Association Delegates" at the recent convention.

Officers for 1920-1921: Dr. Fred W. Lux, president; Dr. Geo. R. Carson, first vice-president; Dr. Geo. W. Stout, second vice-president; Dr. E. M. Keys, treasurer; Dr. W. T. Cummins, secretary.

Officers for 1921-1922: Dr. S. S. Bogle, president; remainder as above.

Book Reviews

Epidemic Respiratory Disease. By Eugene L. Opie, Francis G. Blake, James C. Small and Thomas M. Rivers. 402 pages. Illustrated. St. Louis: C. V. Mosby Company. 1921. Price, $6.50.

This book should be of great value to students of respiratory diseases. It deals with the bacteriology and pathological anatomy of the respiratory infections accompanying influenza and measles and lays particular stress on the pneumonias. It is carefully compiled from observations of cases during the epidemics at Camp Funston and Camp Pike and is a thoroughly complete and scientific treatise on ground covered. H. A. F.

Treatment of Acute Infectious Diseases. By Frank S. Meara. 2d ed. revised. New York: Macmillan Company. 1921.

The second edition of this very valuable book should be hailed with pleasure by every professional worker, teacher, student or physician, because of the excellent and succinct manner in which the material it contains is presented. It fulfills the chief criteria of correctness, simplicity and practicability. Especially to be commended are the chapters upon typhoid, influenza, pneumonia, encephalitis lethargica, and the exanthems. The tabulation of methods at the end of each chapter, and the correlation of specified dietaries could not be improved upon. If we may perhaps cavil at the including of vaccine treatments, without sufficient qualification, among the other more nearly proven methods of treatment, it does not detract from the value of the volume as one of the most useful that have recently been published. C. H. A.

Simplified Infant Feeding. By Roger H. Dennett. 385 pages. Illustrated. 2d edition. 1920. Philadelphia and London: J. B. Lippincott Company.

The title describes the book. The author avoids the complications of percentage feeding. He advocates whole milk modification for normal infants

and sets forth its principles and practice clearly and concisely, giving methods of calculation to fulfill caloric and food requirements. The common types of nutritional and gastro-intestinal disturbances and their treatment through feeding are discussed. All points are illustrated by clear and careful case histories. The chapters on breast feeding are excellent, and emphasis is laid on its importance to the infant and the means employed to avoid premature weaning. Other chapters cover travel, the premature infant, use of boiled milk, proprietary foods and other common problems.

A valuable feature is the careful outline synopsis of the text. There is new matter added in this edition and a revision of the chapters on diarrhoea. The book fulfills its purpose "to help the general practitioner and post-graduate student" in feeding infants and will be a valuable addition to a working library. P. P.

The high price of arsphenamine (salvarsan) is a constant incentive to marketing useless fake substitutes, says the U. S. Public Health Service. Large quantities of such have recently been detected in New York City and elsewhere. These products should not be bought from unknown persons. The Public Health Service also renews its advice against the use of any arsphenamine not licensed and regularly tested by the Hygienic Laboratory of the Service.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

The Medical Clinics of North America. (Issued serially one number every other month). Volume 4 Number 6. By Boston Internists. Octavo of 297 pages including complete Index to Volume 4 and 35 illustrations. Per clinic year (July, 1920, to May, 1921). Paper, $12 net; cloth, $16 net. Philadelphia and London: W. B. Saunders Company.

The Surgical Clinics of North America. (Issued serially, one number every other month). Volume 1, Number 3. By Boston Surgeons. 345 pages, with 159 illustrations. Per clinic year (February, 1921, to December, 1921). Paper, $12 net; cloth, $16 net. Philadelphia and London: W. B. Saunders Company.

Essays on Surgical Subjects. By Sir Berkeley Moynihan, K. C. M., G. C. B., Leeds, England. Octavo of 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $5.00.

The Principles of Therapeutics, by Oliver T. Osborne, M. D., Professor of Therapeutics, Department of Medicine, Yale University. Octavo of 881 pages. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $7 net.

The Assessment of Physical Fitness. By Georges Dreyer, C. B. E., M. A., M. D., in collaboration with George Fulford Hanson, with a foreword by Charles H. Mayo, M. D. 127 pages. New York: Paul B. Hoeber, 1921. Price, $3.50.

Soaps and Proteins. Their colloid chemistry in theory and practice. By Martin H. Fischer, with the collaboration of George D. McLaughlin and Marian O. Hooker. 272 pages. New York: John Wiley & Sons, Inc., 1921.

Board of Medical Examiners

Board of Medical Examiners' Report on Result of Examinations held for License to Practice Medicine at Their Meeting June 28, 1921.

Tabulation by Schools Showing Number of Graduates From Each California School Examined, as Well as Graduates From Medical Schools Outside the States of California.

	Passed	Failed	Total	% Passed	% Failed	Passed	Failed	Total
Physicians and Surgeons								
University of California	30	0	30	100	0			
Stanford University	12	0	12	100	0			
Coll. Med. Evangesists	17	0	17	100	0			
C. P. & S. Med. Dept., U. S. C.	17	0	17	100	0			
Oakland Coll. of Med	1	0	1	100	0			
Coll. of P. & S., S. F.	5	1	6	83	16			
C. of Osteo., P. & S., L. A.	6	2	8	75	25			
Extra State Graduates of								
United States	24	1	25	96	4			
Italy	1	0	1	100	0			
Mexico	1	1	2	50	50			
Japan	0	2	2	0	100	28	5	33
Canada	2	0	2	100	0			
Russia	0	1	1	0	100		84	15
Drugless								
C. of Osteo., P. & S., L. A.	15	0	15	100	0			
Extra State	0	1	1	0	100			
Chiropodist								
Cal. Coll. of Chiropody	11	1	12	91	8			
Midwife								
Extra State	0	1	1	0	100			

New Members

Dr. Belle E. Merrill, Oakland; Dr. Henry F. Crandall, Oceanside; Dr. A. M. Gregory, Oakland; Dr. G. L. Chamberlain, Oakland; Dr. Mary Isabelle Armstrong, Oakland; Dr. W. L. Ellis, Calexico; Dr. George F. Farman, Santa Barbara; Dr. H. H. Searls, San Francisco; Dr. Miley B. Wesson, San Francisco; Dr. Francis B. Quinn, San Francisco.

Transferred—Dr. David A. Marsan, from Marin to Alameda county.

Deaths

Black, James Alexander. Died in San Francisco, California, September 17, 1921. Age, 52. Was a graduate of Kentucky School of Medicine and Surgery and Long Island College Hospital, New York. 1892. Licensed in California, 1893, and a member of the Medical Society, State of California.

Chamblin, M. R. Died in the Masonic Home, Decoto, California, September 6, 1921. Age, 92. Was a graduate from Jefferson Medical College, Pennsylvania, 1850. Licensed in California, 1886.

Patek, Robert. Died in San Francisco, California, August 25, 1921. Was a graduate from Johns Hopkins University, Baltimore, Maryland, 1906. Licensed in California, 1906, and a member of the Medical Society, State of California. Age, 40.

Long, Seely Frederick. Died in San Francisco, California, September 19, 1921. Was a graduate of the Medical Department of the University of New York, 1881. Licensed in California, 1881.